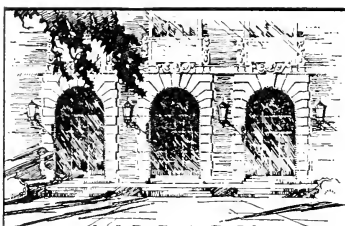


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ILLINOIS HISTORICAL SURVEY

• • • •

...and the

Twenty-second Annual Report

OF THE

Chief State Factory Inspector

OF

Illinois

OSCAR F. NELSON, Chief



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For the Year July 1, 1914, to June 30, 1915



SPRINGFIELD, ILL.

ILLINOIS STATE JOURNAL CO., STATE PRINTERS.

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LETTER OF TRANSMITTAL.

ILLINOIS DEPARTMENT OF FACTORY INSPECTION,
1543 Transportation Building, 608 South Dearborn Street,
Chicago, Ill., June 30, 1915.

His Excellency, Hon. Edward F. Dunne, Governor of Illinois.

DEAR SIR: In compliance with section 2 of the Act creating this department I have the honor of submitting herewith the twenty-second annual report for the fiscal year ending June 30, 1915.

Very respectfully yours,

OSCAR F. NELSON,
Chief State Factory Inspector.

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REPORT OF THE CHIEF STATE FACTORY INSPECTOR.

This report concerns itself with the work of the Illinois Department of Factory Inspection during the fiscal year beginning July 1, 1914, and ended June 30, 1915.

During this period the high standard of inspection work, established at the beginning of the preceding year, has been maintained and, in some instances, raised, as will be noted from a perusal of the statistical tables and the text of the following pages.

The enforcement of the new "Wash House Law" and the numerous important safety items in the "Health, Safety and Comfort Law" occupied a large portion of the inspectors' time. Both of these laws deal with technical problems which require time to solve, especially in consideration of the fact that any one order of an inspector may involve the expenditure of thousands of dollars. Each one of these special items will receive adequate discussion in the subsequent pages.

Briefly outlined, the work of this department during the past fiscal year shows that the inspectors visited 56,068 business establishments, in which 69,099 inspections were made according to the various provisions contained in the numerous laws enforced by this department. This total number of inspections is slightly greater than the total for the preceding year, despite the length of time consumed by the special investigations mentioned in the preceding paragraph.

The General Assembly has charged this department with the enforcement of nine laws during the course of its twenty-two years of existence. With the close of the session of the Forty-ninth General Assembly another law has been added, making a total number of ten statutes placed under the jurisdiction of this department for its enforcement. The last law on this list, which becomes effective the first day of July, 1915, is the act prohibiting the use of basements in carrying on any manufacturing process in which excessive fumes, dusts and injurious vapors are created.

A list of the laws enforced by this department is herewith appended:

- I. An act to regulate the employment of children, commonly termed the "Child Labor Law".
- II. An act to regulate and limit the hours of employment of females, popularly styled the "Women's Ten Hour Law".
- III. An act to regulate the manufacture of clothing and other articles, known as the "Garment Law".
- IV. An act to promote the public health and protect certain employees in this State from the dangers of occupational diseases, often referred to as the "Occupational Disease Law".
- V. An act to provide for the protection and safety of persons in and about the construction of buildings, called the "Structural Law".
- VI. An act to regulate the manufacture of ice cream and butterine, termed the "Ice Cream Law".
- VIII. An act to provide for the health, safety and comfort of employees, commonly termed the "Health, Safety and Comfort Law".

IX. An act to provide for wash rooms in certain employments, to protect the health of employees and secure public comfort, called the "Wash House Law".

X. An act in relation to employments creating poisonous fumes or dust in harmful quantities, known as the "Basement Law".

The following summary shows in concise form the results of the work done by this department in the enforcement of the first nine laws just enumerated:

SUMMARY OF INSPECTIONS.

July 1, 1914, to June 30, 1915.

Enforcement of provisions.	Establishments visited.	Number of inspections.
Total for State.....	56,068	69,099
According to—		
Child Labor Law, entire State.....	32,260	38,379
Child Labor Law, in Cook Co.....	21,486	26,178
Child Labor Law, outside Cook Co.....	10,774	12,201
Ten Hour Law, entire State.....	12,991	16,757
Ten Hour Law, in Cook Co.....	8,958	10,904
Ten Hour Law, outside Cook Co.....	4,033	5,853
Garment Law, entire State.....	1,649	2,516
Occupational Disease Law, entire State.....	357	595
Structural Law, entire State.....	386	722
Blower Law, entire State.....	363	1,238
Ice Cream Law, entire State.....	521	1,351
Wash House Law, entire State.....	589	589
Health, Safety and Comfort Law, entire State.....	6,952	6,952
Health, Safety and Comfort Law, in Cook Co.....	4,074	4,074
Health, Safety and Comfort Law, outside Cook Co...	2,878	2,878

The following tabulation presents the number of employees in establishments according to the laws under which they were inspected:

NUMBER OF EMPLOYEES REPORTED IN ESTABLISHMENTS INSPECTED ACCORDING TO THE VARIOUS LAWS.

Year July 1, 1914, to June 30, 1915.

ESTABLISHMENTS INSPECTED ACCORDING TO CHILD LABOR LAW.

Employees in Chicago—

Number of males over 16 years of age.....	286,282
Number of females over 16 years of age.....	113,457
Number of males under 16 years of age.....	2,750
Number of females under 16 years of age.....	2,104
Total number of employees in Chicago.....	<u>404,593</u>

Employees Outside of Chicago—

Number of males over 16 years of age.....	107,018
Number of females over 16 years of age.....	26,782
Number of males under 16 years of age.....	625
Number of females under 16 years of age.....	326
Total number of employees outside of Chicago.....	<u>134,751</u>

Employees in State of Illinois—

Number of males over 16 years of age.....	393,300
Number of females over 16 years of age.....	140,239
Number of males under 16 years of age.....	3,375
Number of females under 16 years of age.....	2,430

Total number of employees in State of Illinois..... 539,344

ESTABLISHMENTS INSPECTED ACCORDING TO THE WOMEN'S TEN HOUR LAW.

Employees in Chicago—

Number of males over 16 years of age.....	167,788
Number of females over 16 years of age.....	82,855
Total number of employees in Chicago.....	<u>250,643</u>

Employees Outside of Chicago—

Number of males over 16 years of age.....	73,999
Number of females over 16 years of age.....	20,473
Total number of employees outside of Chicago.....	<u>94,472</u>

Employees in State of Illinois—

Number of males over 16 years of age.....	241,787
Number of females over 16 years of age.....	103,328
Total number of employees in State of Illinois.....	<u>345,115</u>

ESTABLISHMENTS INSPECTED ACCORDING TO HEALTH, SAFETY AND COMFORT LAW.

Employees in Chicago—

Number of males over 16 years of age.....	82,464
Number of females over 16 years of age.....	34,868
Total number of employees in Chicago.....	<u>117,332</u>

Employees Outside of Chicago—

Number of males over 16 years of age.....	95,510
Number of females over 16 years of age.....	9,729
Total number of employees outside of Chicago.....	<u>105,239</u>

Employees in State of Illinois—

Number of males over 16 years of age.....	177,974
Number of females over 16 years of age.....	44,597
Total number of employees in State of Illinois.....	<u>222,571</u>

ESTABLISHMENTS INSPECTED ACCORDING TO GARMENT LAW.

Employees in Chicago—

Number of males over 16 years of age.....	18,080
Number of females over 16 years of age.....	22,933
Number of males under 16 years of age.....	183
Number of females under 16 years of age.....	533
Total number of employees in Chicago.....	<u>41,729</u>

Employees Outside of Chicago—

Number of males over 16 years of age.....	105
Number of females over 16 years of age.....	267
Number of males under 16 years of age.....	12
Number of females under 16 years of age.....	47
Total number of employees outside of Chicago.....	<u>431</u>

Employees in State of Illinois—

Number of males over 16 years of age.....	18,185
Number of females over 16 years of age.....	23,200
Number of males under 16 years of age.....	195
Number of females under 16 years of age.....	580
Total number of employees in State of Illinois.....	<u>42,160</u>

ESTABLISHMENTS INSPECTED ACCORDING TO BLOWER LAW.

Employees in Chicago—

Number of males over 16 years of age.....	2,382
Number of females over 16 years of age.....	43
Total number of employees in Chicago.....	<u>2,425</u>

Employees Outside of Chicago—

Number of males over 16 years of age.....	403
Number of females over 16 years of age.....	.....
Total number of employees outside of Chicago.....	<u>403</u>

Employees in State of Illinois—

Number of males over 16 years of age.....	2,785
Number of females over 16 years of age.....	43
Total number of employees in State of Illinois.....	2,828

ESTABLISHMENTS INSPECTED ACCORDING TO STRUCTURAL LAW.

Employees in Chicago—

Number of males over 16 years of age.....	14,576
Total number of employees in Chicago.....	14,576

Employees Outside of Chicago—

Number of males over 16 years of age.....	2,154
Total number of employees outside of Chicago.....	2,154

Employees in State of Illinois—

Number of males over 16 years of age.....	16,730
Total number of employees in State of Illinois.....	16,730

ESTABLISHMENTS INSPECTED ACCORDING TO OCCUPATIONAL DISEASE LAW.

Employees in Chicago—

Number of males over 16 years of age.....	38,971
Number of females over 16 years of age.....	12,425
Total number of employees in Chicago.....	51,396

Employees Outside of Chicago—

Number of males over 16 years of age.....	18,935
Number of females over 16 years of age.....	12,111
Total number of employees outside of Chicago.....	31,046

Employees in State of Illinois—

Number of males over 16 years of age.....	57,906
Number of females over 16 years of age.....	24,536
Total number of employees in State of Illinois.....	82,442

ESTABLISHMENTS INSPECTED ACCORDING TO WASH HOUSE LAW.

Employees in Chicago—

Total number of males over 16 years of age.....	30,866
-------------------------------------------------	--------

Employees Outside of Chicago—

Total number of males over 16 years of age.....	42,959
-------------------------------------------------	--------

Employees in State of Illinois—

Total number of males over 16 years of age.....	73,825
-------------------------------------------------	--------

FINANCIAL REPORT OF THE DEPARTMENT.

Appropriations and expenditures for the year ended June 30, 1915.

APPROPRIATIONS.

SALARIES—

Statutory officials—

Chief	\$ 3,000 00
Assistant chief	2,250 00
Physician	1,500 00
Attorney	1,500 00
Thirty deputy inspectors.....	36,000 00

Graded positions—

Clerks, stenographers, etc.....	12,160 00
Traveling expenses	16,000 00

OFFICE AND GENERAL EXPENSES—

Rent and light.....	5,000 00
Printing, postage, telephone, contingent.....	5,000 00
	<u>\$82,410 00</u>

EXPENDITURES.

SALARIES—

Statutory officials—

Chief	\$ 3,000 00
Assistant chief	2,250 00
Physician	1,500 00
Attorney	1,500 00
Thirty deputy inspectors.....	36,000 00

Graded positions—

Clerks, stenographers, etc.....	12,160 00
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Traveling expenses	13,879 37
--------------------------	-----------

OFFICE AND GENERAL EXPENSES—

Rent and light.....	4,798 53
Printing, postage, telephone, contingent.....	5,000 00
	<u>\$80,087 90</u>

BALANCE.

Traveling expenses	\$2,120 63
OFFICE AND GENERAL EXPENSES—	
Rent and light.....	201 47
	<u>\$2,322 10</u>

CHILD LABOR.

The provisions of the Child Labor Law were enforced with the same vigor as during the previous year. Thirty-eight thousand three hundred seventy-nine inspections were made in 32,260 establishments located in the 102 counties of the State. Of this number, 21,486 places of business were situated in Cook County and received 26,178 inspections. The remaining 10,774 business houses were located outside of Cook County, where 12,201 inspections were made.

In comparing these figures with the previous year we find that 32,981 child labor inspections were made in the entire State and during the year preceding that only 25,131 inspections are recorded for the entire State. This would indicate an increase of 5,398 child labor inspections over the preceding year and an increase of 13,248 over the number reported 2 years ago. The increase in number of this class of inspections made in Cook County over the preceding year is 3,865 and for the remaining 101 counties it is 1,633. Comparing the present year's figures with those of 2 years ago, the increase in number of inspections in Cook County amounts to 11,853. A comparison of the number of inspections made outside of Cook County 2 years ago with the present, offers an increase of 1,395. It will be noted that the number of inspections outside of Cook County remained within a radius of 1,400, while the number of inspections in Cook County leaped over the 8,000 mark for the 2 year period and over the 3,000 mark for the preceding year.

The results of prosecutions, while somewhat diminished as compared with the preceding year, show that 156 convictions for infractions of the Child Labor Law were secured with fines and costs amounting to \$1,832.50 for the entire State. Charged with employing children under 14 years of age resulted in the successful prosecution of 14 cases; in 40 instances convictions were secured for employing children over 8 hours per day; 33 convictions were obtained where the employer permitted children to work before 7 a. m. or after 7 p. m.; for employing children without an age and school certificate in 57 prosecutions terminated in favor of the department; 6 convictions were had where employers

violated section 11 of the Child Labor Law, which prohibits the employment of children under 16 years of age at dangerous machinery; and in 6 instances where the deputy inspectors were obstructed from entering the place of business the court ruled against the defendants.

In Chicago convictions under the "Child Labor Law" were secured on the following counts: Employing children under 14 years of age, 9; working children 14 to 16 years of age over 8 hours per day, 23; working children before 7 o'clock in the morning or after 7 o'clock in the evening, 17; hiring children without an age and school certificate from the board of education or parochial school authorities, 25; for putting children under 16 years of age to work at dangerous machines, 3; and for refusing admittance to the deputy inspector and obstructing him in the performance of his duty, 5.

In cities other than Chicago the following number of convictions were secured for violations of the "Child Labor Law": For employing children under 14 years of age, 5 cases; for employing children between the ages of 14 and 16 years over 8 hours per day, 17 cases; for permitting children 14 to 16 years of age to work before 7 o'clock in the morning or after 7 o'clock in the evening, 16 cases; for hiring children without an age and school certificate, 32 cases; for giving work to children under 16 years of age at dangerous machines, 3 cases; and for obstructing deputies in the performance of their duties, 1 case.

The total number of convictions in Chicago numbered 82 with fines and costs amounting to \$1,122.25. The number of convictions in the other cities totaled 74 cases and the fines and costs \$810.25.

The cases brought by the factory inspector in Chicago are tried in the Municipal Court. In cities other than Chicago the deputies conduct the trials themselves or with the assistance of the State's attorney before a justice of the peace.

A tabulation of the daily schedules of the deputies shows that the percentage of children to the total number of all employees at work in establishments reported on is 1.07 per cent for the entire State, divided into two groups; for the establishments located in Chicago and Cook County, 1.2 per cent, and the other for establishments located outside of Cook County, 0.7 per cent. The percentage of child labor last year amounted to 1.7 per cent for the entire State, so that the percentage this year is not only less than for the preceding year, but is the lowest percentage reported in the history of the department. In other words, about 1 in every 100 employees is a child between the ages of 14 and 16 years. The percentage of child labor for Chicago is 1.2 per cent as against 2.07 per cent during the preceding year. For the previous two years the percentage of child labor in all counties, except Cook, amounted to .9 per cent, or slightly less than 1 out of every 100 persons employed, whereas this year the percentage has been lowered to .7 per cent.

In this connection attention is called to the statements on page 12 of the report last year.

LABOR LEGISLATION.

The following list names the bills which are of interest to wage earners introduced during the session of the Forty-ninth General Assembly:

1. Child Labor Bill.
2. Women's Eight Hour Bill.
3. One Day Rest in Seven Bill.
4. Women's Minimum Wage Bill.
5. Old Age Pension Bill.
6. Initiative and Referendum Constitutional Amendment.
7. Anti-Injunction Bill.
8. Constitutional amendment providing for Compulsory Compensation Law.
9. Bill providing for the safety of compressed air tunnel miners.
10. Car Limit Bill.
11. Full Crew Bill.
12. Amendments to Mothers' Pension Bill.
13. Street Car Men's Ten Hour in Twelve Bill.
14. Bill providing a penalty for bosses extorting money from working men for jobs.
15. Bill providing for the health, safety and comfort of employees in mills, factories and workshops.
16. Bill prohibiting basement workshops in employments generating poisonous fumes or dusts in harmful quantities.
17. Co-operative Law.
18. Compulsory First Aid Medical Bill.
19. First aid cabinets on trains.
20. Amendments to Compensation Law.
21. State Free Employment.
22. Annual Registration Bill.

BILLS ENACTED.

Of the twenty-two bills just enumerated, seven were enacted into laws:

1. Amendments to the Mothers' Pension Law.
2. Health, Safety and Comfort Law.
3. Prohibiting use of basements in certain employments.
4. Co-operative Law.
5. First aid cabinets on trains.
6. Amendments to Compensation Law.
7. Amendments to law relating to employment offices and State labor agencies.

The remaining fifteen bills failed of passage.

CHILD LABOR BILL.

This bill as introduced prohibited the employment of minors under 16 years of age. The bill was referred to the Committee of Industrial Affairs; amendments were made so that children between the ages of 14 and 16 years would be permitted to work before and after school hours, the school authorities, however, being authorized to cancel child's working permit if it is found that such labor seriously retards its school progress.

The Child Labor Bill came up for consideration in the House of Representatives on Tuesday, May 25, 1915, in the order of 3d reading, and it had been agreed that upon its passage in the House these amendments would be submitted in the Senate. This course, however, did not meet with the approval of those opposed to the bill. It was moved that the bill be recalled to the order of 2d reading for the purpose of amendment. This motion was carried by a vote of 60 yeas to 50 nays. The motion to postpone further consideration of the bill was defeated. The amendments agreed upon by the proponents of the bill were thereupon submitted and adopted.

An amendment was then offered to change the word "eighteen" whenever it appeared in the bill to the word "sixteen". This was adopted by a vote of 82 yeas and 21 nays. This amendment devitalized the whole measure, because it cut out all provision for working certificates that would enable the authorities to enforce the law. The measure was endorsed for the purpose of prohibiting child labor up to the age of 16 years during the time of school session, and contained the usual provision—working certificates—up to the age of 18, for the purpose of making the law enforceable. Striking out the word "eighteen" ruined the whole certificate plan, through which any child labor law must be enforced. The bill was again ordered engrossed for a 3d reading.

The Senate bill dealing with this same question was brought out of committee by petition and placed on 2d reading.

The committee held several hearings. I was invited to appear before this committee to answer questions relative to the experience of this department in enforcing the present law.

In reply to the question, why I favored raising the minimum age limit of the Child Labor Law from 14 to 16 years, I stated that industry has been completely revolutionized in the last 20 years. The merchant or manufacturer points to himself as an example of the boy who started to work at the tender age of 13 or 14 and who has been successful. He overlooks the fact that when he entered employment 20 or 30 years ago there existed no large industrial establishments of the size we have today; neither was he assigned to the monotonous soul-grinding tasks at which children are employed today. In his time manufacture was largely by hand and some mental effort usually accompanied handiwork. Today, the children are found in industries employed in blind-alley occupations of the most monotonous nature—wrapping soap, packing crackers, carrying away various materials from machines, labeling tin-cans, etc.—all of which duties require no mental effort, and, in their very monotony, stunt the development of the child.

Another reason why I favor raising of the age limit is the fact that today many employers require a medical examination of every applicant for a job, and in a very few years the toiler will find it impossible to secure employment anywhere, unless he or she is able to pass a medical examination that will show that applicant for a job comes up to that high standard of physical fitness. The practice of employing no one until a doctor has certified that the applicant comes up to a high standard of physical fitness may be universal among employers within the next ten years. The development of that practice means the boy or girl of today, if permitted to work at an early age, will arrive at maturity or middle age physically deficient and become a charge, and such physically deficient toilers will constitute the army of unemployed and will be permanent charges on public charity. Therefore, I believe that it would be far better if the State amended the Mothers' Pension Law so that the State would contribute to supporting the boy or girl in school until 16 years of age in cases where the parents could not afford from their own income to keep the child at school until that age. Such action would be a better investment than to permit, as is now done, children to go to work at an early age only to become inmates of public institutions and objects of public charity in latter years.

WOMEN'S HOURS OF EMPLOYMENT BILL.

The bill regulating the hours of women workers, originally an 8 hour bill, but amended to provide for 9 hours, came to the House for passage on Tuesday, May 26.

Thirty-three states, the District of Columbia, and the territory of Porto Rico provide for shorter hours for women than does the State of Illinois. Based upon a combination of the hours per day and week, Illinois occupies the very low rank of 36th. The relative position of the various states in respect to the working hours of women is as follows:

- | | |
|--------------------------|---------------------|
| 1. Porto Rico. | 21. Pennsylvania. |
| 2. Arizona. | 22. Rhode Island. |
| 3. California. | 23. Tennessee. |
| 4. Colorado. | 24. Texas. |
| 5. District of Columbia. | 25. Vermont. |
| 6. Washington. | 26. Wisconsin. |
| 7. Oregon. | 27. Georgia. |
| 8. Missouri. | 28. Kentucky. |
| 9. Nebraska. | 29. Louisiana. |
| 10. New York. | 30. Maine. |
| 11. Utah. | 31. Maryland. |
| 12. Minnesota. | 32. Mississippi. |
| 13. Idaho. | 33. New Jersey. |
| 14. Montana. | 34. North Carolina. |
| 15. Connecticut. | 35. South Carolina. |
| 16. Delaware. | 36. Illinois. |
| 17. Massachusetts. | 37. North Dakota. |
| 18. Michigan. | 38. Oklahoma. |
| 19. New Hampshire. | 39. South Dakota. |
| 20. Ohio. | 40. Virginia. |

The great State of Illinois is a little more than a mere "hanger on" in the array of progressive states which have sought to protect their women and safeguard the coming generation.

Commenting editorially on the defeat of the 8 hour bill, the Chicago Record-Herald, under the caption "Sowing the Dragon's Teeth," predicts that as a result of this refusal to provide for reasonable regulation, that ultimately a far more drastic law will be enacted than that which women of the State were appealing for at the present session.

"The business man," says the article, "who devotes even 10 hours a day to his business is exceptional. He could not do it and maintain the nerve-racking pace."

These business men are the same who deny any shortening of the hours for working women. "During the summer," says Mr. Glenn, speaking of the business men, "he devotes more time to golf, motoring or other outdoor exercises. He realizes the importance of vacations."

ONE DAY REST IN SEVEN BILL.

Under the able championship of Representative W. C. Kane the bill providing for one day rest in seven, which has been amended while on 2d reading so as to exempt several occupations from its provisions, passed the House of Representatives on June 10. The vote in its favor was 95, this being more than required for its passage.

The bill came up in the Senate on Thursday, June 17, and a number of managers of the larger Chicago hotels brought to Springfield several women, girls and men employees in an effort to convince senators that

the hotel workers did not want such legislation. When questioned the girls admitted that they had been requested to come by the hotel proprietors, and it was made quite evident that they would have been discharged, if they had refused to come.

MINIMUM WAGE BILL.

The bill providing for the means to establish minimum wage rates for women was considered in joint session of the Committee on Industrial Affairs of the House and Committee on Labor, Mines and Mining of the Senate. The joint committees recommended the separate committees' favorable action on the bill. Pointing out the serious consequences of the condition that requires women to work for less than a living wage, John H. Walker, chairman of the Joint Labor Legislative Board, sent the following letter to the Legislature:

It means not only the breaking down physically of the future mothers of our race, and an influence to the deterioration of their children, it means starvation and undernourishment on the part of those who are required to earn their own living and that the weaker will be forced to depend on charity in order to get whatever additional is necessary to keep them, which must necessarily develop a spirit of subserviency and dependency and the undermining of their self-respect, continually resulting in the degeneration of the moral fiber not only of themselves but of the future generation. And in many instances it means forcing these women and girls into a life of shame.

It is hard to understand why it should be difficult to convince some men that women workers ought to be paid a living wage. The mere statement itself is an unanswerable argument.

HEALTH, SAFETY AND COMFORT ACT.

The bill for the reenactment of the Health, Safety and Comfort Act (H. B. 713), was passed without difficulty. The bill, while not changing the present law, is nevertheless of vital importance for the reason that the constitutionality of the present law had been seriously questioned owing to the fact that at the time of its passage there was some slight difference in the Senate and House Journals of 1909 which was not discovered for a long time and was then brought out in a recent case in defense of an employer who was being prosecuted by the department for a violation of the provisions of the law. Its reenactment was therefore essential.

METAL POLISHERS' BILL.

The bill regulating conditions under which metal polishing and other dusty trades are to be conducted was passed by the House and Senate and has since been approved by Governor Dunne.

This law prohibits the use of basements for metal polishing and grinding.

In order to preserve a correct record of new legislation in the annual reports of the Chief State Factory Inspector, a verbatim copy of the law is herewith presented:

AN ACT in relation to employments creating poisonous fumes or dust in harmful quantities, and to provide for the enforcement thereof.

SECTION 1. Be it enacted by the People of the State of Illinois, represented in the General Assembly: That every employer of labor in this State, engaged in the manufacture, repairing or altering of any metals, wares or merchandise which may produce or generate poisonous or noxious fumes or

dusts in harmful quantities, such as metal polishing, grinding, plating and dipping of metals in acid solutions or dips, are hereby declared to be especially dangerous to the health of the employees so engaged.

Such manufacture, repairing or altering of any metals or merchandise in such processes and places of employment shall be conducted in rooms lying wholly above the surface of the ground.

SEC. 2. It shall be the duty of the Chief State Factory Inspector, the Assistant State Factory Inspector, and the deputy factory inspectors to enforce the provisions of this Act, and to prosecute all violations of the same before any magistrate or any court of competent jurisdiction in this State, and for that purpose such inspectors are empowered to visit and inspect, at all reasonable hours, all places that may come under the provisions of this Act. In the enforcement thereof, said Chief State Factory Inspector, and the deputy inspectors shall give proper notice in regard to any violation of this Act to any employer of labor violating it, and direct the proper changes to be made to protect the health of the employees therein, and such notice shall be written and printed and shall be signed by the Chief State Factory Inspector, or any one of his assistants authorized by him to sign such orders, and said notice may be served by delivering the same to the person upon whom service is to be had or by leaving at usual place of abode or business an exact copy thereof, or by sending a copy thereof to such person by mail, and upon receipt of such notice calling attention of the employer to such violation, he shall immediately comply with the provisions of this Act.

SEC. 3. Any person, firm or corporation who shall personally, or through any agent, violate any of the provisions of this Act, or who omits or fails to comply with any of its requirements, or who obstructs or interferes with any examination or investigation being made by the Chief State Factory Inspector, the Assistant Chief State Factory Inspector, and the deputy factory inspectors in accordance with the provisions of this Act, or any employee who shall violate any of the provisions of this Act, shall be deemed guilty of a misdemeanor and on conviction thereof shall be punished for the first offense by a fine of not less than twenty-five dollars (\$25.00) nor more than two hundred dollars (\$200.00) and upon conviction of the second or subsequent offenses, shall be fined not less than one hundred dollars (\$100.00) nor more than five hundred dollars (\$500.00) and in each case shall be committed until such fine and costs are paid, unless otherwise discharged by due process of law.

SEC. 4. For any injury to the health of any employee proximately caused by any wilful violation of this Act or wilful failure to comply with any of its provisions, a right of action shall accrue to the party whose health has been so injured, for any direct damages sustained thereby; and in case of the loss of life by reason of such wilful failure as aforesaid, a right of action shall accrue to the widow of such deceased person, his lineal heirs or adopted children, or to any person or persons who were, before such loss of life, dependent for support upon such deceased person, for the recovery of damages for the injury sustained by reason of such loss of life, not to exceed the sum of twenty-five thousand dollars: *Provided*, that every such action for damages in case of death shall be commenced within two (2) years after the death of such employee.

MOTHERS' PENSION BILL.

The bill providing for amendments to the Mothers' Pension Law, introduced by Representative J. J. Bruce, of Chicago, was enacted into a law. The amendments provided by the Bruce Bill, briefly stated, are as follows: That every mother who has been deserted by her husband for a period of 2 years becomes entitled to benefits as a mother and widow under the law; that in cases where the father was not a citizen at the time of his death, the widow may, by declaring her intentions properly, become entitled to the benefits; that the owning of a home up to the value of \$1,000 shall not render the mother ineligible. The maximum amount for a widow and mother with a large family is increased.

The amendments to this law were humane and necessary and should have been enacted into law. Even from a financial standpoint it is cheaper to allow the mother a pension for the purpose of keeping her children with her, and thus maintaining the family life, than it is to take from her, break up the family, and support them in institutions.

While some improvements have been made the Mothers' Pension Law is still in sad need of amendments that will make it accomplish its real purpose.

STREET CAR MEN'S TEN HOUR IN TWELVE BILL.

The Street Car Men's Union calls attention to the fact that there are more than 34,000 accidents on the Chicago Street Railways in one year. The street car men are overworked. Their hours are too long. The traveling public is paying the penalty in untimely deaths and maimed bodies and the employees in shattered nerves and prematurely wrecked constitutions. Men who are required to devote over two-thirds of each day to the service of a street railway company cannot be in a condition to operate rapidly moving cars with safety. The Street Car Men's Bill, limiting their working time to ten consecutive hours in twelve, ought to have been enacted into law as a matter of safety for the public.

WORKMEN'S COMPENSATION ACT.

The bill containing amendments to the Workmen's Compensation Act drafted by the joint commission representing employers and organized workers passed the Legislature and became law when Governor Dunne signed that measure. The bill was changed in some particulars from its original form as recommended by the commission, but was amended in the House of Representatives.

The amendments to this Act make changes in the administrative features of the Act, raises the minimum compensation to be paid for injury resulting in death to \$1,650 and the minimum weekly payments to \$6.00 and clarifies the sections regarding injuries to the feet and disfigurements to the hand, head or face.

FIRST AID TO THE INJURED.

House Bill No. 969 providing for "First Aid to the Injured" cabinets on railroad trains for the use of persons who may be injured in the course of operation of such trains, is now a law.

DEPARTMENT OF LABOR BILL DEFEATED.

This measure, proposed by the Economy and Efficiency Commission, was intended to create an industrial commission with almost unlimited powers to make and unmake rules governing industrial affairs and providing for a form of compulsory arbitration. This bill was introduced under the title, "An Act to revise and consolidate the labor laws of the State of Illinois and to create a department of labor". It was modeled upon the same lines as the law recently enacted by the New York Legislature.

WOMEN'S TEN HOUR LAW.

During the fiscal year, which this report covers, 16,757 inspections were made in 12,991 establishments located throughout the State for

the purpose of enforcing the provisions of this law—10,904 inspections are recorded of 8,958 establishments situated in Cook County; while in the 4,033 places of business in other counties 5,853 inspections were made.

In 281 instances it was necessary to resort to prosecution of employers, who persisted in violating the provisions of this law, and fines and costs were collected amounting to \$3,946.60. In 77 cases, where women were employed in excess of the legal 10 hours per day, convictions were had, resulting in fines and costs amounting to \$1,964.95. For failure to keep a time record according to section 5 of the law, 204 convictions followed with fines and costs aggregating \$1,981.65. In the Municipal Court of Chicago 43 convictions were secured for working women over 10 hours per day, the fines and costs of which amounted to \$1,086.00; and for failure to keep a time record 123 were decided against the defendants who were fined \$1,229.25. In cities other than Chicago 34 prosecutions for working women over 10 hours per day were successfully brought by this department and fines and costs assessed at \$878.95; and for noncompliance with section 5 of this law prescribing the recording of hours of employment, convictions in 81 cases amounted to \$752.40 fines and costs.

The present law has been in operation 6 years and employers have familiarized themselves with its provisions. A better compliance with the 10 hour a day provision is evident, but many employers still take the time record feature very lightly. We find cases where employers attempt to change the records, both in the case of time clocks and in the case of time books. In the first instance it has been discovered by our inspectors that the employer would instruct his female help to punch the clock when leaving for dinner, but to omit doing so after their return. In this manner the girls were employed many hours overtime without a record being made of their final quitting time. Instances of this kind invariably are discovered, because sooner or later the employer is going to discharge one or more girls; and the minute that happens, the girls will aim to "get square" with their former employer by entering a complaint at this office which calls for an investigation at which the facts are brought out. Time book erasures or omissions lead to suspicion and the inspector must then question the women. Very often the women are instructed to say that they are working not more than 10 hours, whereas in reality they actually do not know the length of time they do work. In one instance an employer went to the extreme of turning his store clock back, so that the girls always signed the incorrect time. Where the help sign their own time upon entering or leaving the place of their employment it is invariably correct, in the absence of express instructions of the employer to inscribe fictitious hours. Our inspectors have most of their difficulties with those establishments where the proprietor or some person in the confidence of the employer enters the time of all the help. However, partly by reason of the numerous prosecutions of the previous year and partly on account of the insistence of this department upon a strict compliance with the provisions of this Act, the reports of violations during the past year have been considerably reduced.

In urging the need of reducing the legal hour limit of employment of females we must again refer to the chart on page 33 of the twenty-first annual report and the subsequent comment. The history of the defeat of

the attempted nine hour bill under the caption of "Labor Legislation" should also be perused in this connection.

THE GARMENT LAW.

Two thousand five hundred sixteen inspections were made in 1,649 establishments manufacturing garments, cigars, artificial flowers and other articles in the entire State specifically mentioned in the law.

One thousand six hundred twenty-six establishments located in Chicago and Cook County received 2,483 inspections; while 33 inspections were made in 23 establishments situated in cities outside of Cook County.

This is the first time in the history of the department that garment inspections are recorded for cities other than Chicago.

The majority of these inspections relate to the clothing industry and its many branches.

Under the chapter devoted to the closer discussion of this subject a review of the outer-garment industry and its hazards is presented.

OCCUPATIONAL DISEASE LAW.

This law applies in particular to dusty trades and trades in which poisonous materials are used in the process of manufacture or where employment is dangerous by reason of injurious and poisonous gases, fumes and vapors.

In the course of the past year 595 inspections were made in 357 establishments throughout the State.

As will be noted from the statistical table in the chapter devoted at great length to this subject, few orders for compliance were issued during the past year. The reason for this is, that most of the establishments within the scope of this Act have received the regulation orders or are about to finish the necessary hygienic installation required by this department. The majority of these inspections have been made by the medical staff of this department for the purpose of checking orders and also to note whether any of the places are failing to continue to comply with the law.

Every establishment within the scope of this Act must send medical reports monthly upon the condition of the health of its employees to the State Board of Health. The reports are then transmitted to this department where a complete and systematic record of these reports and other data pertaining to this subject are preserved. At present, monthly examinations of employees of 257 firms are received by this department.

Various interesting articles on this subject will be found in the chapter devoted to a discussion and the statistics of occupational diseases in this State.

STRUCTURAL LAW.

During the past year 722 inspections were made of 386 places where buildings were being erected, altered, cleaned or repaired. For the first time in the history of the department, inspections under this law have been made in cities located throughout the State in addition to such as are regularly necessary in Chicago. The presumption previously pre-

ailed that no dangerous construction work of any kind was being carried on, except in Chicago.

Reference to the statistics in the chapter entitled "Results of Inspections under the Structural Law" enters into minute detail of the hazards connected with structural work and offers some very excellent advice with reference to guarding against certain dangers. This chapter points to a partial list of injuries and deaths due to failure of safeguarding the workers against certain well-known dangers connected with this trade.

It was necessary during the past year to enter prosecution in 11 cases, all of which resulted in convictions with fines and costs amounting to \$443.00.

BLOWER LAW.

In the effort to enforce the provisions of this law, 1,238 inspections were made in 363 establishments where metal polishing and buffing is done. This law aims to protect the health of employees engaged in metal polishing, grinding and buffing. The hazards of this trade are eliminated by means of exhaust systems which carry off the dusts and fumes. Other safety measures are necessary according to the provisions of this law and the details covering the work of this department are found in the chapter entitled "Results of Inspections under the Blower Law".

HEALTH, SAFETY AND COMFORT LAW.

This law is the safety first statute and applies in almost every case where safety in industry is required. The Act was threatened to be crossed off the statute books and for that reason was reenacted by the Forty-ninth General Assembly.

In the course of the past year 6,952 inspections were made in as many establishments in the entire State. Of this number, 4,074 factories were located in Chicago and Cook County, while 2,878 are distributed through the remaining counties.

Thirty-nine thousand eighty-two orders were issued to correct defective and dangerous conditions pertaining to buildings, sanitation, power transmission, dangerous machines, and dangerous machinery parts. The law states that the Chief Factory Inspector must grant 30 days after an order has been issued to an employer for the purpose of complying with these orders. It is with some little pride that this department can point not only to the opportunity of calling attention to so many danger points as were contained in the 39,082 official orders issued, but that at the close of this fiscal year 29,129 of these orders upon reinspection and "check-up" were actually complied with.

The proper spacing of dangerous machinery; burns in foundries; hazards about revolving shafting, about lathes, around woodworking machinery, from belts; dangers in printing establishments; lighting and ventilation in factories; all of these subjects are thoroughly discussed in the chapter showing the results of inspections under the "Health, Safety and Comfort Law."

Failure to comply with the orders issued by this department to observe certain safety features as outlined in the official orders necessi-

tated prosecutions resulting in convictions, the fines and costs of which amounted to \$294.40 for the entire State. Of this total number, 11 cases whose fines and costs aggregated \$177.00 were successfully prosecuted in Chicago, while in the other cities 6 convictions were had with fines and costs amounting to \$117.40.

This law charges the factory inspector with the duty of eliminating all dangerous conditions in factories for the purpose of protecting life and limb. The lesson of one industrial accident demands the future elimination of such kinds of accidents. Therefore, the factory inspector should by law receive either an original or a duplicate report of all industrial accidents, regardless of whether the firm is under the Compensation Law or not. At present reports of accidents of firms under the Compensation Law are sent to the Industrial Board; whereas the others come to this office. By reason of this situation we are able to investigate but a small percentage of the industrial accidents happening daily in this State.

WASH HOUSE LAW.

This law compels the installation of adequate washing facilities in such places of employment where the workmen become covered with grease, smoke, dust, grime and perspiration to such an extent that their unclean condition after a day's labor would endanger their health or cause the public great annoyance.

This law has come to be recognized as one of the greatest boons to the workingman on account of its hygienic measures. The wide discretionary powers placed in the hands of the factory inspector in the matter of determining what are adequate washing facilities have resulted in obtaining actual adequate and sanitary conditions for the men. When the law became effective many employers had placed certain washing facilities in dark and unsanitary rooms, merely, as they thought, to comply with the law. In cases of this kind the men were generally better off without any washing facilities.

Many employers were under the impression that after installing a spigot or two, this department could not compel them to further install such facilities as were contemplated by the law. Where this department demanded showers in addition to wash troughs, the claim was made that orders could not be issued for dual facilities, but we have insisted that the law vested us with the power of determining what constitutes adequate facilities, and accordingly in such employments, where the workmen perspire very freely and a mere washing of the face and hands would not remove the unhygienic condition of the rest of their body, shower baths have been insisted upon despite the fact that wash troughs were provided.

The immediate results of cleanliness in the factory has had its beneficial effect upon the whole community. During the past year 589 orders to install adequate washing facilities were issued to a like number of establishments. How adequate these facilities have been, may be gathered from the fact that in numerous cases one job involved an expenditure of from \$1,000.00 to \$36,000.00. In many instances entire buildings were erected with the equipment consisting of lockers, troughs with hot and cold water, shower baths, and minor appliances.

The orders necessary under this law have provided thousands of persons with work—masons, carpenters, plumbers and many other trades people have received the benefit of this class of work. It is safe to say from a conservative estimate of the cost of the various installations under this law for the past two years that compliance with orders from this department has involved the expenditure of a million and a half dollars.

Seventeen obstinate cases were convicted in the courts and fined \$450.40. Of this number, nine cases were brought in the Municipal Court of Chicago and the remaining eight in courts outside of Chicago.

ICE CREAM AND BUTTERINE LAW.

Under this Act sanitary conditions of such establishments as manufacture ice cream and butterine are regulated.

One thousand three hundred fifty-one inspections were made during the past year in 521 places, all of which made ice cream.

CITIES AND TOWNS VISITED.

During the fiscal year just completed, 296 towns and cities were visited by deputy inspectors for the purpose of inspecting establishments located in these various towns. During the preceding year, 135 cities and towns had been visited. The number of inspectors for the present and the previous year being the same.

In this connection attention is called to the inadequate size of the inspection force. Much time is consumed in traveling from town to town. If the Legislature would increase the number of inspectors for this department less time would be spent in visiting one town after another, since a certain number of inspectors would be located in certain districts throughout the State.

NIGHT INSPECTIONS.

On account of the holiday season and special complaints of night work, our force of inspectors are compelled to make inspections at night after their regular day's work. If the inspection force were larger, a certain number of inspectors could be assigned to this class of work entirely. As it is now, the demands upon the health of inspectors is severe, since they must work day and night during the Christmas season and the Easter rush.

The appended table shows the number of night inspections under the various laws:

Law.	Number of establishments.	Number of inspections.	Total employees.	Males over 16.	Females over 16.	Boys 14 to 16.	Girls 14 to 16.	Total children 14 to 16.
Child Labor Law.	684	2,311	33,198	14,602	18,371	91	134	225
Garment Law.....	281	296	9,540	3,676	5,840	8	16	24
Ten Hour Law....	622	1,167	30,132	10,536	19,489	44	63	107
Total.....	1,587	3,774	72,870	28,814	43,700	143	213	356

As stated before, most of these inspections are necessitated by reason of the holiday rush season. However, about 20 per cent of this class of inspections are scattered over the entire year based on complaints of alleged violations, which called for a special investigation in each case.

PROSECUTIONS.

The number of prosecutions for the 12 months ended June 30, 1915, is less than the number recorded for the preceding fiscal year. Conservatively speaking, and without any egotism whatsoever, the lesser number of prosecutions this year is due to the lesson administered by the large number of prosecutions and convictions during the preceding 12-month period. Our department has created a respect for the laws that come under its jurisdiction for enforcement among employers. For instance, during the holiday season of 1913 a large number of violations were found in retail stores and prosecutions followed. It was the first time in the history of the department that some of the prominent mercantile houses of Chicago had been prosecuted. As a result of that action it was found by a close inspection during the last holiday season that retail stores were living well within the pale of the law.

In view of the fact that the department was created not for prosecutions, but to secure compliance with the laws, we have every reason to congratulate ourselves on the fact that we are today securing a compliance without the necessity of many prosecutions.

COMPLAINTS.

Most complaints are received at this office by telephone, some by letter, and a few are made in person. In the majority of cases the informant does not care to reveal his name, fearing probable exposure, as in the case of an employee who enters a complaint against his or her employer with reference to violations of the "Ten Hour Law" where women work over ten hours per day. In such instances the employees who are working at the establishment reported, but desire to have conditions changed, instead of talking with the employer, the working girl or woman prefers to have her grievances adjusted through this department and in that manner avoids being discharged.

The following table shows the number of complaints received during the past year. One thousand one hundred and fifty cases were reported and after investigation by our deputies it was found that 662, or 58 per cent, were meritorious. While the number of complaints is less than last year, the number of meritorious cases is greater in proportion. Complaints of alleged violations of the "Ten Hour Law" exceed all others combined; those on "Child Labor" and "Health, Safety and Comfort" rank second and third respectively. The number of complaints from sources where the benefits of washing facilities are desired under the "Wash House Law" is considerable, when one takes into consideration the limited number of establishments within the scope of this law.

CLASSIFICATION OF COMPLAINTS RECEIVED AND THE RESULTS OF
INVESTIGATION.

Year.	Total number of complaints.	Child Labor Law.	Women's Ten Hour Law.	Blower Law.	Structural Law.	Ice Cream and Buttery Law.	Health, Safety and Comfort Law.	Occupational Disease Law.	Wash House Law.	Miscellaneous.	Meritorious complaints resulting in violations.	Per cent of meritorious cases reported.
1908.....	272	258	.....	1	.....	8	.....	.....	.....	5	91	0.33
1909.....	268	237	26	1	1	.....	.....	.....	.....	2	85	.31
1910.....	282	132	68	17	3	.....	41	.....	.....	.....	101	.36
1911.....	713	202	344	35	.....	.....	130	1	.....	4	312	.44
1912.....	1,157	259	662	43	7	.....	167	4	.....	15	536	.47
July 1, 1912, to June 30, 1913.....	455	118	251	13	2	1	67	3	.....	.....	237	.52
July 1, 1913, to June 30, 1914.....	1,265	296	709	28	37	1	151	11	32	.....	685	.54
July 1, 1914, to June 30, 1915.....	1,150	277	585	17	19	2	182	6	44	18	662	.58

VENTILATION INSPECTIONS.

Section 11 of the "Health, Safety and Comfort Act" provides for adequate ventilation of factories, mines and workshops. During the past year special investigations were made of shops employing large numbers of persons. The investigations disclosed the surprising fact that almost every establishment visited supplied less pure fresh air than required by law.

The following table shows that out of a total of 254 workrooms examined, 245 violated this section of the law, or, in other words, permitted thousands of employees to remain in stuffy or foul air during each working hour of the year.

Jeopardizing the health of employees by reason of lack of ventilation is no excuse. Nothing tends towards greater inefficiency than overheated or poorly ventilated workshops. Dirty air retards the thinking capacity and fatigues the muscles; pneumonia and other respiratory ailments thrive in "dirty air" shops.

If employers would consider that an impure atmosphere in a workshop means a loss of money to them, they would not hesitate to install the best kind of an equipment. If the air in a room is maintained at an even temperature, kept fresh and sweet, the result is glowing health to the employees. They will take to their work with vigor, the output is increased and the physical and mental disposition of the employees spells good humor and willingness.

On the other hand the employees in a stuffy, poorly ventilated workroom will carry a grouch with them all day, work to them is a burden, they cannot spread cheerfulness and they seldom find words of praise for their employers. Can anyone expect better of employees working under such conditions? They breathe a filthy air, eight, nine, ten, eleven and even twelve hours a day. Filth begets disease. Their bodies as well as their minds become diseased. In the face of such conditions an employer is puzzled, why the production of his employees is slow and small. A diseased mind is a grouch and a grouch is a formidable knocker of good business.

Employers should realize that the provision of fresh air was inserted in this law for their benefit, as well as for the good of the employee.

Every employer should know that the law demands of him that he must provide 500 cubic feet of air space for every employee.

Any workroom whose outside windows and doors measure one-eighth of the total floor area and having at least 2,000 cubic feet of air space for each person employed does not require artificial means of ventilation. Nevertheless, all such rooms must be aired before beginning work and during meal periods.

When a room contains more than 500 but less than 2,000 cubic feet of air space per person employed and the outside window and door area is at least one-eighth the floor area, then artificial means of ventilation must be provided, supplying during each working hour at least 1,500 cubic feet of fresh air for every person employed.

When a room has less than 500 cubic feet of air space per person, and the outside window and door space is less than one-eighth of the floor area, then artificial means of ventilation must be provided, which will supply during each working hour throughout the year at least 1,800 cubic feet of fresh air for each person employed.

All injurious drafts must be avoided. The supply of fresh air must not cause the temperature to fall materially below the average temperature maintained.

The fresh air supply must be taken from the outside at least 20 feet above the ground. Air taken from the cellars or basements is absolutely prohibited.

Fresh air is admittedly the deadly foe of all disease. Provisions for fresh and pure air are to be found in theaters, in street cars, in halls and other places where people gather for only a short space of time; then why should not fresh air be supplied in abundance in workrooms, where persons remain long hours each day?

This department will enforce this section of the law without favor. The department regrets that it is unable to cover the ground more rapidly. Here again the present small force of inspectors is a great hardship. Time is an important factor in making this class of inspection, as it requires two inspectors to take the measurements of a room often involving many long mathematical problems.

The methods of ventilation are entered into more fully in the chapter "Results of Inspections under the Health, Safety and Comfort Law".

RESULTS OF SPECIAL INVESTIGATIONS FOR THE INTRODUCTION AND IMPROVEMENT OF VENTILATION SYSTEMS IN FACTORIES, MILLS AND WORKSHOPS, ACCORDING TO SECTION 11 OF THE HEALTH, SAFETY AND COMFORT LAW.

For the six months period. January to June, 1915.

Month.	Number of establishments inspected in Chicago and Cook county.	Number of work-rooms in-spected.	Number of em-ployees in work-rooms.	Number of orders issued to provide for—	
				1,500 cubic feet of air.	1,800 cubic feet of air.
January.....	20	39	5,376	20	19
February.....	38	46	2,952	33	10
March.....	8	11	621	7	3
April.....	40	55	4,575	34	18
May.....	44	65	7,600	49	14
June.....	28	38	2,633	32	6
Total.....	178	254	23,757	175	70

SQUAD INSPECTIONS.

On account of the large number of complaints of infractions of the labor laws received from persons residing in cities outside of Cook County a new system of inspections was inaugurated, one that would enable this office to cover an entire town at one time by a squad of deputies from ten to fifteen in number. These squads were permitted to remain in a city until the important places of employment had been investigated and instructions issued.

The following table shows the results of squad inspections in the three principal cities covered during the past year. Two hundred and thirty-six inspections of 176 establishments were made in East St. Louis. Of this total number of inspections, 127 were made for the purpose of enforcing the provisions of the "Child Labor Law," 55 the provisions of the "Women's Ten Hour Law," 5 the provisions of the "Structural Law," 4 the provisions of the "Blower Law," 4 the provisions of the "Health, Safety and Comfort Law," and 45 the provisions of the "Wash House Law." A total of 64 violations was discovered in the 176 establishments located in East St. Louis, which shows how entirely unfamiliar employers in that city were with the work of the Factory Inspection Department.

In the city of Quincy 327 inspections are charged to 250 establishments. One hundred eighty-two inspections were made with reference to observances of the "Child Labor Law," 126 under the "Women's Ten Hour Law," 15 under the "Garment Law," 2 under the "Structural Law," 13 under the "Blower Law," 16 under the "Health, Safety and Comfort Law," and 23 under the "Wash House Law." In Quincy most of the employers thought this department had ceased to exist. Many employers were of the opinion that the laws were being permitted to age on the statute books, so seldom had been the visits of deputy factory inspectors to factories in Quincy during previous years. This squad investigation resulted in the detection of 155 violations during the 14 days of the inspectors' visit to Quincy. In the majority of cases the provisions of the "Women's Ten Hour Law" were absolutely disregarded. The requirements of the "Blower Law" and the "Wash House Law" showed signs of attempts to comply only with the letter of the law.

The investigation in Springfield did not include inspections according to the provisions of the "Blower Law," the "Health, Safety and Comfort Law," and the "Wash House Law." A total of 127 inspections were made in 66 establishments. The complaints received from people in Springfield confined themselves entirely to the "Child Labor Law" and the "Women's Ten Hour Law." The inspections show that the efforts of the deputies of this department were devoted almost exclusively to determine how meritorious the numerous "Child Labor" and "Ten Hour" complaints were. As a result of 57 inspections according to the provisions of the "Child Labor Law" 26 violations were discovered, while 29 violations of the "Women's Ten Hour Law" were found. The number of "Child Labor Law" violations was surprisingly greater than in any of the other cities. The reason for the large number of violations in Springfield is difficult to explain. Unlike the employers of Quincy, the people of Springfield acknowledged that they were familiar with the provisions of the labor laws. Undoubtedly, they took advantage of the

known fact that Springfield was subject to inspections as often as deputies could reach the city.

In almost every instance violations were prosecuted, particularly in Springfield. However, the results of prosecution will show only a small number of convictions, which is due to the unsatisfactory system of justices of the peace.

RESULTS OF SQUAD INSPECTIONS IN SELECTED CITIES.

City.	Number of establishments.	Number of employees.					Number of inspections according to—								Number of violations according to—				Second inspections.					
		Total.	Males over 16 years.	Females over 16 years.	Boys 14 to 16 years.	Girls 14 to 16 years.	Total.	Child Labor Law.	Ten Hour Law.	Garment Law.	Structural Law.	Blower Law.	Health, Safety and Comfort.	Wash House Law.	Child Labor Law.	Ten Hour Law.	Garment Law.	Structural Law.	Blower Law.	Health, Safety and Comfort.	Wash House Law.	Child Labor Law.	Ten Hour Law.	
East St. Louis	176	6,961	6,423	510	28	..	236	127	55	126	15	5	4	4	45	10	..	6	..	16	32	2	1	
Quincy.....	250	6,310	4,749	1,533	19	9	327	182	55	126	15	2	13	16	28	4	80	..	2	30	16	19	2	2
Springfield...	66	1,454	580	860	7	7	127	57	60	5	11	..	..	..	26	29	..	3	..	..	..	1	1

A SPECIAL INVESTIGATION.

ARE EMPLOYERS IN ILLINOIS OPPOSED TO FURTHER RESTRICTIONS ON CHILD LABOR?

Despite the action of the Forty-ninth General Assembly in defeating the Child Labor Bill, which intended to raise the minimum age limit of child employment from 14 to 16 years, this question must be answered in the negative.

Most people take it for granted since the members of the General Assembly decided that no additional restrictions be placed on the statute books with reference to the employment of children of tender ages, that the will and desire of the manufacturers of this State have been served. Details concerning the defeat of the Child Labor Bill are presented under the caption "Labor Legislation."

For the purpose of determining how well founded the opposition of employers to child labor legislation is, this department carried on an investigation. A list of manufacturers and employers was prepared at random without any intent of securing replies from firms previously known to be in favor of new child labor legislation.

A short time after this department had started its investigation an article appeared in the "Manufacturers' News" under date of August 12, 1915, with the following heading:

"DON'T ANSWER CHILD LABOR QUESTIONS."

The article offers the following advice: "The Illinois Department of Factory Inspection has sent a series of questions to manufacturers employing minors apparently for the purpose of collecting statistics upon which to base future legislation. There is no statute requiring manufacturers to answer questions. Employers are requested to fully answer

the question as to whether their business would suffer, if the minimum age limit of the child labor law be raised from 14 to 16 years."

This notice serves as a splendid example of one man trying to embarrass the work of a State institution. The reference to "one man" points to Mr. John M. Glenn, president of the Manufacturers' News.

This same Mr. Glenn in his publication dated May 13 and 20 attempted to cast further reflections upon this department by attacking its chief, particularly in an article entitled "Personal Political Machinations."

The following letter to the author of this publication clearly states the position of this department and refutes in no uncertain terms the insinuations against its chief:

The issues of your publication of May 13 and 20 honor me to the extent of considerable space. I recognize the expressions contained therein are but your personal opinions, and were it not for the fact that you have been successful in deluding a number of employers in this State into subscribing for your publication, as well as mailing gratuitously your publication to the members of the Legislature and others, I would pay no attention to the statements contained therein concerning myself.

In order that you may not be able to say that the general insinuations you make remained unanswered, I desire to reply as best one can to general insinuations, and challenge you to insert the same in the columns of your personal property, the Manufacturers' News.

The two-column article of general insinuations under the head of "Personal Political Machinations," reveals one indirect allegation and two direct charges. The indirect allegation that I am giving my time which belongs to the public, to general lobbying at Springfield, requires me to say that the Illinois Department of Factory Inspection, through me as its chief, is responsible for the introduction of but three measures, namely: a bill to provide certain changes in the so-called Structural Iron Law, providing for safety in and about the construction, alteration and repair of buildings. These changes have been suggested by the experiences of the department in enforcing that law and are necessary in order that the contractor who seeks to evade the law through services of attorneys who find technical flaws therein, may not have an advantage in bidding on work over the honest law-abiding contractor who complies with the law.

The second measure is that providing for the registration with this department of employers who have five or more employees, giving the name, location, number of people employed, etc. This bill was introduced in order that this department might have available the location of all places of employment in order that we might not inspect some places two or three times a year, and never inspect other places of employment, due to our lack of knowledge of their location. For instance, there are in Chicago in the residence districts, factories that are never located, because the inspector has no knowledge of their existence. There are many factories throughout the State that are located in out-of-the-way places that never have an inspection. It is not fair that they should be permitted to continue without inspection, have accidents that create a public sentiment against all manufacturers; and you, Mr. Glenn, I am certain, have not specific authority from even a solitary manufacturer to oppose the bill that provides for their registration once a year with this department. The bill does not provide any fee for registration.

The third bill that has been receiving my attention at Springfield is the salary increase bill. You make the direct charge that I am seeking to increase my salary from \$3,000 to \$5,000 a year, and also that I am asking an increase in the appropriation bill amounting to four times the amount the department is receiving at the present time. You say that this department received \$33,160 appropriation for 1914, and that I am now asking an appropriation of \$114,410 per annum. As usual, you talk at random and without knowledge of the facts. This department, for salaries and other expenses, is at present receiving an appropriation of \$82,400 per annum. We

are asking for an increase of \$60,000 per annum, which would bring the appropriation up to an aggregate of \$142,400 per annum, if granted. The provision for increase in salaries requests an increase in the inspection force of 30 deputies to 45 deputies, and an increase in salary of from \$1,200 to \$1,500 per annum for all deputies. I have on file in this office hundreds of letters received from manufacturers commending the department for its excellent services in the way of suggesting reductions in the hazards that have brought about a decrease in insurance premiums on their plants and elimination of accidents.

The men who are clothed with authority to go into a plant and order changes costing the employer in instances large sums of money, are worth more than \$1,200 per annum to the State, particularly the manufacturers therein.

We are also asking for an increase for the physicians in this department of from \$1,500 per annum to \$2,000 per annum; also requesting an increase in salary for the assistant chief from \$2,250 to \$3,000 per annum, and, it is true that we are also asking an increase for the chief from \$3,000 per annum to \$5,000 per annum. The increase for the chief was inserted in the estimates because the chief factory inspectors of all the other industrial states are receiving \$5,000 per annum and the heads of other State departments in Illinois are receiving from \$3,600 per annum to \$5,000 per annum, while my salary at present is \$3,000 per annum. I explained to the Governor some weeks ago that if he felt that a request for an increase for my position would embarrass him or stand in the way of the increase for the deputy inspectors and others in the department, that he could eliminate any increase for my position.

To indict and convict you, Mr. Glenn, of inconsistency, insincerity and untruthfulness, requires no effort. Your record as a misrepresentative of the manufacturers' interests is known to a majority of the manufacturers in this State, practically all of the members of the Legislature, and so exceptionally well known to the laboring people of the State that it has often created antagonism between the employer and the employee where such antagonism would not have existed but for your misrepresentations.

In conclusion, I challenge you or any other individual, organization, or association, to find even one instance where I have deviated from my sworn duty in the capacity of Chief State Factory Inspector.

In this connection it is appropriate to repeat the current report that Mr. Glenn is owner, editor, proprietor, general manager, reporter, solicitor; in fact, the entire stock in trade of the trade paper purporting to have the full sanction of the majority of manufacturers of this State and alleged as being issued under their direction. How fallacious the latter part of this report is, will be gathered in the following paragraphs.

Until this notice appeared, comparatively few manufacturers replied to the inquiries requested by this department. Of interest is the fact that immediately upon publication of the above mentioned warning, statements were received in great numbers; in fact, the majority of replies arrived after the "knock" in Mr. Glenn's "News" had appeared.

Two conclusions must be drawn from this coincidence:

- a. Either Mr. Glenn's "esteemed sheet" has a very limited circulation and its distribution consists largely of "dead heads" or;
- b. The subscribers and readers of Mr. Glenn's copy do not take him seriously and therefore accept the contrary of his advice as the proper course to follow.

The second conclusion appears justifiable by reason of the fact that fully 95 per cent of the informants answered all questions, although Mr. Glenn states in his notice, "that no legal requirements to answer the questions exist." In effect Mr. Glenn means to dictate to the employer to answer only the last question and to answer that question in the negative. To what extent Mr. Glenn's directions were followed will

be observed by turning to Table No. 8, which shows that over 90 per cent of the employers express themselves as favoring a 16 year minimum clause in the "Child Labor Law."

Mr. Glenn evidently overlooked the fact that employers in this State always reply in a courteous manner to a courteous request and that this department has of late received the friendly cooperation and confidence of employers. The utter failure of Mr. Glenn's dictations to employers should serve as a warning to persons of his sinister stripe to avoid any attempt at embarrassing the work of any institution where that work is promulgated in good faith.

Before presenting the items contained in the questionnaire, the chief of this department desires to take this opportunity of expressing his sincere thanks and appreciation to all employers interrogated for their courteous and detailed replies.

The contents of the questionnaire follow:

1. Nature of business.
2. Number of male employees over 18 years of age.
3. Number of female employees over 18 years of age.
4. Number of male employees between the ages of 16 and 18 years.
5. Number of female employees between the ages of 16 and 18 years.
6. Number of male employees between the ages of 14 and 16 years.
7. Number of female employees between the ages of 14 and 16 years.
8. How many employees between the ages of 14 and 16 years are skilled employees: Number of males? Number of females?
9. Do you find employees 14 to 16 years of age deficient in education and general usefulness?
10. Do you find that children between the ages of 16 and 18 years are better equipped than those 14 to 16 years old?
11. If you employ children between the ages of 16 and 18 years, state whether you prefer to employ children over 16 years of age to those under 16 years of age?
12. How many children 14 to 16 years old are engaged at piece work?
13. How many children 16 to 18 years old are engaged at piece work?
14. How many hours per day do your children between the ages of 16 and 18 years work?
15. What is the minimum and maximum wage paid by you to children between the ages of 14 and 16 years?
16. What is the minimum and maximum wage paid by you to children between the ages of 16 and 18 years?
17. Would your particular line of business suffer, if the minimum age limit of the "Child Labor Law" were raised from 14 to 16 years? State reasons fully for or against.

This investigation covered 152 establishments and replies were received from over 80 per cent or 121 firms.

Table No. 1 presents the number of firms reporting classified into 20 industries. The 121 establishments contain a total of 89,752 employees. Of this total number, 57,641 were males over 18 years of age, 24,169 were females over 18 years of age, 2,962 were males between the ages of 16 and 18 years, 4,361 were females between the ages of 16 and 18 years, 291 were boys 14 to 16 years old, and 328 were girls 14 to 16 years old.

The total number of employees reported here represents slightly over one-seventh of the total number of employees reported for the State according to the figures of the manufacturers' census of 1910.

The total number of children between the ages of 14 and 16 years is about one-sixteenth of the number of children reported at work during 1913 and 1914 by this department.

Reference to the appended table shows that the industries using large numbers of children below 16 years of age are, the shoe industry, piano manufacturing, paper box making, candy industry, clothing and general merchandising. These industries employ children under 16 years of age mainly, because the children cannot demand high wages, and, secondly, because they are taught to do one definite class of work, which is a monotonous repetition each working day of the year. Such work rapidly turns the child of tender years into a machine; since the child has no responsibility, nothing to engage or occupy his mind and his tasks grow to be a mere mechanical habit. The sameness of the child's tasks are so regular that the child could perform its work blindfold.

TABLE NO. 1.—NUMBER OF ESTABLISHMENTS AND NUMBER OF EMPLOYEES COVERED BY INVESTIGATION.

Industry.	Number of establishments.	Number of employees.					
		Total.	Males over 18 years.	Fe-males, over 18 years.	Males, 16 to 18.	Fe-males, 16 to 18.	Males, 14 to 16. Fe-males, 14 to 16.
1. Manufacture of shoes.....	5	3,744	1,761	1,315	306	317	20 25
2. Food products.....	7	4,081	2,996	1,004	38	35	8
3. Meat packing.....	3	7,500	6,294	766	218	222	
4. Pianos.....	4	1,550	1,312	104	81	28	24 1
5. Tin cans and tinware.....	4	2,817	1,852	708	166	74	17
6. Brooms.....	2	238	136	93	4	5	
7. Paper boxes.....	5	1,011	266	505	16	154	8 62
8. Confectionery.....	4	1,321	453	553	34	138	9 134
9. Printing.....	9	3,403	2,090	888	187	144	88 6
10. Restaurants.....	8	2,799	1,783	1,004	4	8	
11. Laundries.....	8	545	136	359	2	48	
12. Cleaners and dyers.....	7	172	99	69	3	1	
13. Jewelers, manufacturing.....	3	4,569	2,087	1,978	187	274	26 17
14. Iron, steel and electrical products.....	9	8,709	7,862	605	125	95	14 8
15. Clothing.....	18	10,153	4,148	5,259	197	480	10 59
16. Agricultural implements.....	5	8,132	7,535	485	100	11	1
17. Twine and cordage.....	2	1,837	1,252	523	37	22	2 1
18. Smelters.....	3	3,117	3,040		62		15
19. General merchandising.....	3	16,713	7,151	6,545	856	2,123	29 9
20. Manufacture of cigars.....	3	245	161	73	8	3	
21. Miscellaneous.....	9	7,096	5,227	1,333	331	179	20 6
Total.....	121	89,752	57,641	24,169	2,962	4,361	291 328

The classification "miscellaneous" includes one felt factory, bottle factory, insecticide factory, gas works, rubber hose factory, window shade factory, soda fountain plant, chemical factory and one manufacturer of surgical instruments and dressings.

Table No. 2 shows by percentages the employment of minors to total employed for each industrial classification. This table is divided into two groups, the first giving the percentages of minors 14 to 16 years of age compared to the total persons employed, and the second showing the percentages of children between the ages of 16 and 18 years to the total number of employees.

Less than .7 per cent of children 14 to 16 years of age were reported in the 121 establishments included in this investigation, whereas over 8 per cent of children between the ages of 16 and 18 years are employed.

The following 5 industries employ children 14 to 16 years of age in excess of 1 per cent: Candy, paper box, printing, piano, and shoe industries.

Children between the ages of 16 and 18 years are employed in excess of 1 per cent in all industries contained in the table. General merchandising ranks first with slightly less than 18 per cent, the paper box industry is next with almost 17 per cent, the manufacture of shoes ranks third with more than 16½ per cent; candy making is fourth with over 13 per cent, and jewelry manufacturing is fifth with over 10 per cent. The remaining industries employ less than 10 per cent of the age group between 16 and 18 years.

TABLE NO. 2—PER CENT OF CHILDREN 14 TO 16 YEARS OF AGE AND 16 TO 18 YEARS OF AGE TO TOTAL NUMBER OF EMPLOYEES.

Industry.	Per cent of children 14 to 16 years of age to total employed.	Per cent of children 16 to 18 years of age to total employed.
1. Manufacture of shoes.....	1.2	16.64
2. Food products.....	0.19	1.8
3. Meat packing.....		5.86
4. Pianos.....	1.61	7.03
5. Tin cans and tinware.....	0.603	8.52
6. Brooms.....		3.78
7. Paper boxes.....	6.92	16.81
8. Confectionery.....	10.82	13.02
9. Printing.....	2.76	9.72
10. Restaurants.....		0.43
11. Laundries.....		9.17
12. Cleaners and dyers.....		2.32
13. Jewelers, manufacturing.....	0.94	10.09
14. Iron, steel and electrical products.....	0.25	2.52
15. Clothing.....	0.68	6.67
16. Agricultural implements.....	0.012	1.36
17. Twine and cordage.....	0.16	3.21
18. Smelters.....	0.48	1.99
19. General merchandising.....	0.23	17.82
20. Manufacture of cigars.....		4.49
21. Miscellaneous.....	0.36	7.18
Total.....	0.69	8.16

Table No. 3 shows the number of skilled or trained employees between the ages of 14 and 16 years.

A glance at the table will bring out this noteworthy point, that very few of the children between the ages of 14 and 16 years are trained in any special line of business. The reason for this condition is obvious and must point legislators toward the road of providing trade schools for our children.

In the 121 establishments reporting, only 84 out of 619 children, 14 to 16 years of age, or 13.6 per cent, were classified as skilled hands. Compared to the total of all employees, these 84 children form the insignificant class of .09 per cent.

The skilled employees of the age group mentioned are found in only 4 of the 21 industries. In the manufacture of shoes, 30 out of a total of 45 children, or 66.7 per cent, were graded as skilled hands; in the manufacture of pianos, 8 out of a total of 25 children, or 32 per cent, were classified as skilled employees; in the manufacture of paper boxes, 36 out of a total of 70 children, or 51.4 per cent, were considered trained,

and in the confectionery industry, 10 out of a total of 143 children, or 7 per cent, were registered as trained hands. With the exception of the 30 children reported in the shoe industry, one-third of the other so-called skilled employees in the manufacture of pianos, paper boxes and candy are pieceworkers.

TABLE NO. 3—PER CENT OF SKILLED EMPLOYEES 14 TO 16 YEARS OF AGE.

Industry.	Total number of all employees.	Total number of children 14 to 16 years of age.	Total number of skilled employees 14 to 16 years of age.	Per cent of skilled employees 14 to 16 years of age to total employed.	Per cent of skilled employees 14 to 16 years old to total employees 14 to 16 years old.
1. Manufacture of shoes.....	3,744	45	30	.8	66.7
2. Food products.....	4,081	8			
3. Meat packing.....	7,500				
4. Pianos.....	1,550	25	8	.5	32
5. Tin cans and tinware.....	2,817	17			
6. Brooms.....	238				
7. Paper boxes.....	1,011	70	36	3.6	51.4
8. Confectionery.....	1,321	143	10	.8	7
9. Printing.....	3,403	94			
10. Restaurants.....	2,799				
11. Laundries.....	545				
12. Cleaners and dyers.....	172				
13. Jewelers, manufacturing.....	4,569	43			
14. Iron, steel and electrical products.....	8,709	22			
15. Clothing.....	10,153	69			
16. Agricultural implements.....	8,132	1			
17. Twine and cordage.....	1,837	3			
18. Smelters.....	3,117	15			
19. General merchandising.....	16,713	38			
20. Manufacture of cigars.....	245				
21. Miscellaneous.....	7,096	26			
Total.....	89,752	619	84	.09	13.6

Table No. 4 shows the number of firms answering the following three questions:

TABLE NO. 4.

Question 9—Do you find employees 14 to 16 years of age deficient in education and general usefulness?

Question 10—Do you find that children between 16 and 18 years of age are better equipped, generally speaking, than those 14 to 16 years of age?

* Question 11—Do you prefer to employ children over 16 years of age, state reason for or against?

Question.	"Yes."		"No."		Per cent "Yes."	
	Number of establishments.	Total of employees in same.	Number of establishments.	Total of employees in same.	Of the establishments.	Of the employees.
Question 9.....	98	72,111	23	17,641	80.99	80.34
Question 10.....	107	83,907	14	5,845	88.43	93.48
Question 11.....	117	87,864	4	1,888	96.69	97.89

Question No. 9 is answered in the affirmative by over 80 per cent of the firms. These establishments contain over 80 per cent of the total employed. Twenty-three establishments, employing 17,641 persons, hold the opposite view.

Over 88 per cent of the establishments with over 93 per cent of all employees state that in their opinion and according to their past experiences children between the ages of 16 and 18 years are better equipped

than the younger ones of 14 to 16 years of age. Fourteen establishments employing 5,845 persons differ with this opinion.

Over 96 per cent of the establishments employing over 97 per cent of the total number of wage earners report their preference for the class of older children. Only 4 firms with 1,888 persons on their pay rolls find it difficult to give the older children preference.

The following statements are copied verbatim and show why reputable and progressive business houses express a preference for employing children 16 to 18 years old over those below 16 years of age:

Younger children are irresponsible.

The boy or girl over 16 years of age has a broader education than those under 16, and is better fitted for work.

We place children in Y. M. C. A. night schools. Those 16 to 18 years old have advanced mentality.

We get better service from older operatives.

Our experience is that boys and girls of 16 years and over have developed more of a sense of responsibility and are more anxious to retain their positions and strive for progress. As a rule they are better equipped physically and mentally.

We find employees over 16 years naturally more experienced.

Because they are generally better equipped in education, both mentally and physically. Have more ambition to make good and turn out much better and more work, because of being able to reason and think more about the work.

Our experiences with help under 16 were not satisfactory and we prefer to employ help past 16 years of age only.

We find children over 16 years of age more reliable.

Grasp of mechanics is quicker.

Boys and girls under 16 do not exercise the proper care.

Employees under 16 objectionable on account of inexperience.

They are more efficient.

Because they are more developed and better fit for work.

Healthier and stronger.

Better physically and steadier, also mentally better.

Don't tire so easy, more able to perform a day's work.

They are better equipped.

We employ no children under 16 years of age, because we think it is injurious to their health. We prefer children more than 18 years, because they have reached a much higher degree of efficiency.

Not big enough or strong enough to work.

Our line of business provides factory working conditions superior to the majority, and does not admit of a large number of 14 to 16 year old help at any time.

Because the character of our business requires those older and of more mature judgment.

We consider children under 16 years of age too young to work.

Because they comprehend our requirements better.

More useful, quicker to learn, more likely to stay and grow up in the business.

They are more mature and realize more fully the dangers of working in a factory.

We prefer older children because they are more responsible and more dependable, we would like to see the younger children in school, where they belong.

We find those between 16 and 18 more useful and better skilled.

We dislike to employ children during school age.

We would not care to depend on children under 16 years.

We find them less playful and more settled, and ready to learn their occupation.

Better educated as a rule and have better understanding of what is required of them.

From standpoint of efficiency and safety a boy under 16 is not desirable.

Prefer to employ none under 18, because of lack of discretion, low productive ability and tendency to fail to appreciate hazards.

More mature in judgment and more dependable.

From a humane standpoint we think a child between 14 and 16 should not be employed.

Many answers to this question were expressed by "better equipped"; to avoid repetition of this phrase, it is mentioned here only.

Table No. 5 shows how extensively the piece-price-plan-payment system has been inaugurated. In the case of children between the ages of 14 and 16 years, 6 of the 21 industries have adopted this method of wage payment. In the case of children between the ages of 16 and 18 years, 17 industries figure the earnings of a child by the number of articles it produces or works on.

TABLE NO. 5—NUMBER OF CHILDREN 14 TO 16 YEARS OF AGE AND 16 TO 18 YEARS OF AGE EMPLOYED ON THE PIECE-PRICE PLAN OF PAYMENT. PER CENT OF CHILDREN 14 TO 16 YEARS OF AGE EMPLOYED AS PIECE WORKERS TO TOTAL NUMBER EMPLOYED OF SAME AGE. PER CENT OF CHILDREN 16 TO 18 YEARS OF AGE EMPLOYED AS PIECE WORKERS TO TOTAL EMPLOYED OF SAME AGE.

Industry.	Total number of children 14 to 16 years of age.	Total number of children 14 to 16 years of age engaged in piece work.	Total number of children 16 to 18 years of age.	Total number of children 16 to 18 years of age engaged in piece work.	Per cent of children 14 to 16 years of age at piece work to total employed of same age.	Per cent of children 16 to 18 years of age at piece work to total employed of same age.
1. Manufacture of shoes...	45	-----	623	174	-----	27.9
2. Food products.....	8	-----	73	27	-----	39
3. Meat packing.....	-----	-----	440	85	-----	19.3
4. Pianos.....	25	5	109	77	20	70.6
5. Tin cans and tinware...	17	-----	240	132	-----	55
6. Brooms.....	-----	-----	9	2	-----	22.2
7. Paper boxes.....	70	32	170	99	45.7	58.2
8. Confectionery.....	143	39	172	57	27.3	33.1
9. Printing.....	94	-----	331	23	-----	6.9
10. Restaurants.....	-----	-----	12	-----	-----	-----
11. Laundries.....	-----	-----	50	-----	-----	-----
12. Cleaners and dyers.....	-----	-----	4	-----	-----	-----
13. Jewelers, manufacturing	43	20	461	342	46.5	74.2
14. Iron, steel and electric products.....	22	-----	220	65	-----	29.5
15. Clothing.....	69	9	677	348	13.0	51.4
16. Agricultural implements	1	-----	111	68	-----	61.3
17. Twine and cordage.....	3	-----	59	6	-----	10.2
18. Smelters.....	15	-----	62	-----	-----	-----
19. General merchandising.	38	-----	2,979	16	-----	.05
20. Manufacture of cigars	-----	-----	11	3	-----	27.3
21. Miscellaneous.....	26	2	510	226	7.7	44.3
Total.....	619	107	7,323	1,750	17.3	23.9

In the manufacture of pianos, paper boxes, confectionery and jewelry the percentages of pieceworkers between the ages of 14 to 16 years are very high, showing that these industries depend upon cheap and unskilled labor.

Seventeen of the industries in Table 5 employ a great number of children 16 to 18 years of age on the piece-price payment plan. Manufacturing jewelers employ over 74 per cent of this age class; on this basis piano manufacturers rank second with over 70 per cent, agricultural implement making takes third place with over 61 per cent, paper box making has over 58 per cent, manufacturing of tin cans has 55

per cent, and the clothing industry with over 51 per cent concludes the principal classes of industries paying 16 to 18 year old children by the piece.

In our twenty-first annual report mention was made in a limited way of the evil of the system of paying wages on the piece-payment plan. Not one point can be raised in favor of this plan of wage payment. This plan of wage payment is too one-sided, the balance is always in favor of the employer.

Pieceworkers seldom average more than weekworkers. Pieceworkers are compelled to work under a greater mental and physical strain than other employees. The more ambitious and dexterous set the pace for the less gifted, and when the output reaches a high mark, the price per hundred or thousand is cut down, so that the employee in his final run is really deprived of his just compensation for his actual labor. A law to regulate the payment of wages and one that would eliminate the piece-price system is even more essential than a law regulating the hours of employment.

No person under 21 years of age should be permitted by law to enter any employment on this wage basis. The fast pace and high nervous tension is especially injurious to children in the formative periods of their lives and likewise to women. The excitement is too exhausting and women and children wear themselves out in the course of a few years, their hopes destroyed and their lives wrecked.

Pieceworkers are seldom skilled trades people. They accept the condition for want of something better. They are taught one trick of the trade and perhaps remain at that point until the breakdown. They rarely learn the entire occupation. They follow the pace of a highly speeded machine as a pace-maker and extend themselves in spite of the approaching ruination of their health. After a short time, pieceworkers become human automatons, deprived and stilted of pride, robbed of hopes and future prospects. That is the gist of the sorrowful stories we read in the newspapers, "another human machine beyond repair, just one cog in the great machine of the labor market."

Table No. 6 shows the number of establishments requiring children between the ages of 16 and 18 years to work the number of hours per day as indicated in the table.

It will be noticed that over one-half of the establishments reporting have a 10 hour schedule per day. Less than one-fifth of the establishments covered by the investigation work a 9 hour day and one-ninth of the firms state that 8 hours a day constitutes the working schedule for their employees 16 to 18 years of age. The remaining number of establishments work as follows: 10 shops run $8\frac{3}{4}$ hours per day; 8 shops work $9\frac{1}{2}$ hours per day; 2 work $8\frac{1}{2}$ hours per day; 1 place of business operates $9\frac{3}{4}$ hours per day; and 1 plant reports a 6 hour day schedule.

The one noteworthy fact brought out by this table is that most establishments want their help to work more than 8 hours per day. Since the law does not permit them to employ children between the ages of 14 and 16 years in excess of 8 hours per day, they employ older children for any length of time per day.

When we stop to consider what 10 hours a day in a factory for a child under 18 years of age means, we are confronted with this picture:

The child in the beginning of commercial life spends over 40 per cent of a day inside of a factory. If the factory operates from 7 a. m. to 6 p. m., with an hour off for lunchtime, the child employee may be out in the fresh air and sunlight about two to three hours each day during the summer months. In the winter time that child will go to and return from work without ever walking through one ray of sunshine. We may summarize a child's day in this manner: 10 hours of work, 8 hours of sleep, 1 hour of travel to and from work, permitting the child of 18 years 5 hours, or less than one-fifth, of the day's time for recreation.

Children between the ages of 16 and 18 years—yes, and up to 21 years—need more time for recreation. Just as the mature workingman has set an 8 hour day as a standard, so ought an 8 hour day be established as a universal standard in all occupations and for all ages and sexes. Surely if a grown man considers over one-third of the day injurious to his health, the same may be said of women and children with greater justification.

TABLE No. 6.—HOURS OF EMPLOYMENT FOR CHILDREN BETWEEN 16 AND 18 YEARS OF AGE.

Industry.	Number of establishments employing children 16 to 18 years of age the following number of hours per day.							
	Hours.							
	6	8	8½	8¾	9	9½	9¾	10
1. Manufacture of shoes.....					1	1		3
2. Food products.....					2			5
3. Meat packing.....								3
4. Pianos.....		1			2			1
5. Tin cans and tinware.....						1		3
6. Brooms.....		1					1	
7. Paper boxes.....				1	1	1		2
8. Confectionery.....					1	1		2
9. Printing.....		1		4	3			1
10. Restaurants.....								8
11. Laundries.....		1			1			6
12. Cleaners and dyers.....		2			1			4
13. Jewelers, manufacturing.....					3			
14. Iron, steel and electrical products.....		1				1		6
15. Clothing.....		3			5	3		7
16. Agricultural implements.....		1	1					3
17. Twine and cordage.....								2
18. Smelters.....	1				2			
19. General merchandising.....			1	2				
20. Manufacture of cigars.....		1			1			1
21. Miscellaneous.....		1		1	1			6
Total.....	1	13	2	10	23	8	1	63

Table No. 7 presents the wages paid the two groups of children, as reported by the 121 firms covered by this investigation. The maximum and minimum wage for each age group is given. The figures represent the average of the number of firms for each industrial classification.

According to the table we find that the broom, confectionery and clothing industries pay the smallest amount of wages of all industries to children 14 to 16 years of age. In the piano, shoe and food products industry, children between the ages of 14 and 16 years are offered the highest minimum wage in this classification. The broom, confectionery and iron, steel and electrical classification pay the smallest maximum

wages to children 14 to 16 years old, while the highest maximum wages are given in the piano, food products and jewelry industries.

Children in the age group from 16 to 18 years received the lowest minimum wage in the broom, confectionery and clothing industry compared to the others in the classification. The highest minimum wages for children in this age group are available in the piano, agricultural implement, and twine and cordage industries. The 3 industries offering the lowest maximum wages to children between the ages of 16 and 18 years out of the 20 listed are: cleaners and dyers, brooms and clothing. The 3 industries offering the highest maximum wages are the jewelry, food products, and tin can industries.

It will be noticed that the minimum wages to children between 14 and 16 years of age fluctuates from \$3.25 to \$6.00 and the maximum wage from \$4.50 to \$8.00 per week. The minimum wage to children between 16 and 18 years of age varies from \$6.15 to \$13.50 per week.

TABLE NO. 7—MINIMUM AND MAXIMUM WAGES PAID EMPLOYEES 14 TO 16 YEARS OF AGE AND 16 TO 18 YEARS OF AGE.

Industry.	Weekly wages paid to children—14 to 16 years of age.		Weekly wages paid to children—16 to 18 years of age.	
	Minimum averaged per number of establishments.	Maximum averaged per number of establishments.	Minimum averaged per number of establishments.	Maximum averaged per number of establishments.
1. Manufacture of shoes.....	\$5 00	\$6 00	\$6 00	\$ 9 83
2. Food products.....	5 00	8 00	5 60	12 50
3. Meat packing.....	*	*	7 00	9 50
4. Pianos.....	6 00	8 00	8 00	12 00
5. Tin cans and tinware.....	4 50	5 65	6 00	12 50
6. Brooms.....	3 25	4 50	4 50	7 00
7. Paperboxes.....	4 00	6 75	5 31	10 31
8. Confectionery.....	3 41	5 00	4 50	9 00
9. Printing.....	4 75	6 42	5 41	8 75
10. Restaurants.....	*	*	5 00	7 50
11. Laundries.....	*	*	5 75	7 66
12. Cleaners and dyers.....	*	*	5 20	6 15
13. Jewelers, manufacturing.....	4 50	7 00	4 50	13 50
14. Iron, steel and metal products.....	4 00	5 50	5 60	10 00
15. Clothing.....	3 71	5 78	4 48	7 00
16. Agricultural implements.....	*	*	7 98	9 80
17. Twine and cordage.....	4 00	6 00	7 38	10 00
18. Smelters.....	4 25	6 50	5 50	12 00
19. General merchandising.....	4 00	6 00	6 00	10 00
20. Manufacturers of cigars.....	*	*	6 00	10 00
21. Miscellaneous.....	6 25	8 50	9 00	10 60

* No children employed.

Table No. 8 gives the results to question 17 of the questionnaire. Only 11 firms out of a total of 121 stated that their business would suffer if the minimum age limit of the "Child Labor Law" were raised from 14 to 16 years. In other words, over 90 per cent of the firms covered by this investigation gave it as their opinion that a 16 year minimum age on the statute books would not be harmful.

TABLE NO. 8.—NUMBER AND PER CENT OF FIRMS WHO BELIEVE THAT THEIR BUSINESS WOULD NOT SUFFER IF THE MINIMUM AGE LIMIT OF THE CHILD LABOR LAW WERE RAISED FROM 14 TO 16 YEARS.

Industry.	Number of firms answering "No."	Number of firms answering "Yes."	Per cent of firms answering "No."
1. Manufacture of shoes.....	4	1	80.0
2. Food products.....	7		100.0
3. Meat packing.....	2	1	66.6
4. Pianos.....	3	1	75.0
5. Tin cans and tinware.....	4		100.0
6. Brooms.....	2		100.0
7. Paper boxes.....	3	2	60.0
8. Confectionery.....	4		100.0
9. Printing.....	7	2	77.7
10. Restaurant.....	8		100.0
11. Laundries.....	6	2	75.0
12. Cleaners and dyers.....	7		100.0
13. Jewelers, manufacturing.....	3		100.0
14. Iron, steel and electrical products.....	8	1	88.8
15. Clothing.....	17	1	94.4
16. Agricultural implements.....	5		100.0
17. Twine and cordage.....	2		100.0
18. Smelters.....	3		100.0
19. General merchandising.....	3		100.0
20. Manufacture of cigars.....	3		100.0
21. Miscellaneous.....	9		100.0
Total.....	110	11	90.9

Most of the answers to question 17 simply stated "No," failing to add any reason. The following are some verbatim replies to this question:

Would state that in the manufacture of women's garments we do not employ any male or female help under 16 years of age, as our experience with help under this age limit was not satisfactory. Under these circumstances, we would rather have the age limit increased from 14 to 16 years.

The difference in experience would more than pay for slight difference in salaries and besides we think that young children should be in school and get an education.

We are not opposed to increasing the age limit—in fact we favor it.

It would not affect our business in any way, as we discontinued the employment of boys and girls under 16 years of age on April 1, 1915.

We believe our business would not suffer. Better results would be obtained as far as production is concerned.

I think it would be a good plan to make the minimum 16 years. Children are usually very careless around machinery and it seems difficult for them to realize responsibilities and hazards.

Were the child labor law raised from 14 to 16 years, it would not affect us any as we do not engage anyone under the age of 16 years, in fact. The writer is inclined to feel that children of that age should be at school as much as possible. In some instances a child of this age is compelled to work and proper discrimination can be made in a case of this kind, but under ordinary circumstances the writer would rather not employ children under the age of 16 years.

We prefer help older than 16 years, as they are more efficient.

We believe our business would not suffer, if the child labor law were raised from 14 to 16 years of age.

We have never had any trouble in securing all the help needed between the ages of 16 and 18 years.

We prefer to employ experienced help and such help is, as a rule, over 16 years of age.

We would favor making the working age limit of the child labor law 16 instead of 14 and for various reasons we would favor putting this law on our statutes.

Would rather it would be raised, as I think the employee and employer would both fare better as to quality and profit. Also think there would be better health among employees.

Children under the age of 16 are not strong enough.

We prefer to employ children over 16 years of age. If the age limit is raised from 14 to 16 the law should compel attendance at school up to this age. We have found that where children are not given work at the age of 14, they are kept out of school and allowed to run on the streets, until given employment, the parents claiming that they cannot supply the school books.

We do not believe our business would suffer in any way by raising the child labor law from 14 to 16 years. We do believe, however, that a law of this kind would work injury to a number of persons, owing to the fact that, as a rule, when a boy or girl reaches the age of 14 years, they are, if ambitious at all, desirous of obtaining work, and from the writer's own personal observations, a great number of the best help develops a liking for certain line of business early in life. The writer personally went to work at the age of 12. We have no selfish reasons in the matter and the point of view as given is simply the writer's own personal opinion on the subject.

No. Many of the people working here consider education of a child complete upon finishing the grades and consider it better to have child working than loafing the streets. Besides, the family is often large and the added wage of the child gives much to the comfort and support of the home. If child's wage is necessary to support of family, let him work; otherwise, make him go to school.

The older boys and girls do not want to start at the bottom of the ladder and work their way up to be skilled operators the same as the younger ones do, hence we would have a shortage of skilled help which could be replaced by the State offering boys and girls a training school during this period (14 to 16 years) where the rudiments of the different vocations could be taught. If the State furnished the vocational training schools to boys and girls 14 to 16 years of age, we could get along very well without workers under 16 years of age.

It would suffer simply to the extent of an increased wage in those jobs where we are now using short time help. If all state laws were the same and we are kept on the same plane with factories in other states, the matter would adjust itself, but our competitors are not in Illinois but in other states.

It would suffer somewhat. Our reason is that we think laws covering labor should be uniform laws and do away with discriminating against one state or states. If the laws were uniform we would strongly urge raising the minimum age to 16 years in place of 14 years.

Attention is directed to the opinion of the writer of the fourth last answer. He believes in making an exception where the child's earnings are necessary to support the family. The author of the third to last reply makes a strong point in favor of vocational training, which should be accepted with great favor. The writers of the last two replies raise the interesting topic of uniform state legislation, which must be looked upon as a propaganda worthy of future success.

UNIFORM LABOR LEGISLATION.

There is immediate need of uniform legislation by all the states especially of laws coming under the classification of labor legislation.

Labor legislation may be grouped as follows:

1. Child labor legislation for the purpose of protecting the youth of our country.
2. Laws limiting the hours of female employment with a view of conserving our human resources.
3. Safety laws, prohibiting the use of unguarded dangerous machinery thereby reducing accidents of all descriptions.
4. Laws on sanitation and hygiene for the preservation of good health and prescribing beneficial conditions of employment.

5. Laws pertaining to adequate wages.
6. Laws pertaining to the securing of employment by the state.
7. Sick insurance, old age pension and compensation for loss of life or limb through accident or disease.
8. Mediation and arbitration of disputes between employers and employees.

The subject of uniformity of states laws is no new theory. In the case of commercial law it has been successfully advocated and secured. Forty-seven states have passed the Uniform Negotiable Instruments Act, 31 states have adopted the Uniform Warehouse Receipts Act, 11 states have adopted the Uniform Sales Act, 9 states have adopted the Uniform Stock Transfer Act, and 12 states have adopted the Uniform Bills of Lading Act.

The problem of uniform state legislation has been under consideration of the Commissioners on Uniform State Laws for the past 23 years; the American Bar Association has worked along this line for the past 10 years; the "House of Governors" in convention at Madison, Wisconsin, in 1914, determined to advocate its acceptance, and the Governmental Labor Officials in convention at Detroit, in 1915, also urged its acceptance as a necessary reform measure.

By legislative enactment in this State a commission on uniform laws was created a number of years ago.

While uniform commercial laws have been successfully adopted, while uniformity of marriage and divorce laws has been urged, while uniform child labor laws have been advocated, no uniform labor legislation has been adopted to date.

Two methods of obtaining uniform legislation may be followed:

1. Federal or congressional legislation;
2. Reciprocal state legislation.

The first method might arouse the state rights advocates and should be avoided. The second method is the simpler and quicker.

Few legislative precedents establishing the principles here advocated exist. One example, however, is on record where several states entered into reciprocal agreements which were later enacted by each state legislature. The case in point had to do with the protection of sturgeon in the Delaware River. Three states, New Jersey, Pennsylvania, and Delaware, entered into compacts by which certain legislation was to become operative, when the other states had passed like or similar legislation.

Accordingly the legislature of the state of New Jersey passed an act for the protection of sturgeon. This act was approved March 2, 1895.¹

Section 3 of this act provided "that this act shall take effect when a similar act shall have been passed by the legislatures of Delaware and Pennsylvania." This action was followed by the legislature of Pennsylvania also passing an act for the protection of sturgeon. The legislative act of Pennsylvania was approved June 25² and contained a clause that the act should take effect when similar acts should have been passed by the legislatures of the states of Delaware and New Jersey. Two years later the state of Delaware passed an act for the protection of sturgeon. The act was approved May 19, 1897,³ and section 3 provided "that this

¹ General Statutes of New Jersey 1709-1895, Vol. II., pp. 1593, 1594.

² Session Laws of Pennsylvania, 1895, p. 235.

³ Laws of Delaware, chap. 463, p. 476.

act shall be deemed and taken to be a public act and shall take effect as soon after its passage as similar and concurrent acts which have been passed by the legislatures of the states of New Jersey and Pennsylvania are enforced.”

This precedent illustrates how three states entered into compacts by providing for reciprocal legislation upon a fixed subject.

In 1901 the legislatures of Pennsylvania and New Jersey⁴ passed additional legislation authorizing their respective fishery commissioners to cooperate in restoring the sturgeon fisheries in the Delaware River. Each statute carried an appropriation of \$750 with this stipulation that the act should not become effective nor the funds appropriated thereby become available until the legislatures of the other states passed a similar act and appropriation.

In 1903 the legislatures of Pennsylvania and New Jersey again enacted additional statutes, almost identical in language, each appropriating additional sums for the purposes set forth in the statutes of 1901, and under the same conditions.

In 1907 New Jersey⁵ enacted a law providing for uniform laws to regulate the catching and taking of fish in the Delaware River and Bay between the state of Delaware and the state of New Jersey. Section 25 of this statute provided: “This act shall take effect immediately, but shall not become operative until the legislature of the state of Delaware shall have passed and the governor of that state shall have approved of a similar law agreed upon by the commission, as recited in the preamble of this act.

A compact of this kind required the consent of Congress. In an act approved March 21, 1905, in which the state of New Jersey accepted the compact, the governor was directed to transmit a certified copy of it to the President of the United States, with the request that it be communicated to Congress for its action thereon.

Courts of law would undoubtedly sustain the validity of these statutes. In cases, such as the statutes relating to the fisheries, conditional legislation is obviously necessary. Doubt might arise in cases where conditional legislation is not so obviously necessary, that courts might not sustain enactments of a similar character, but in view of the approval by the courts of retaliatory tax laws it seems highly improbable that any such distinction would be drawn.

The fishery statutes here cited present an excellent example of reciprocal state legislation and the methods employed in each instance might be copied with profit in the field of labor legislation.

It is appropriate to call attention to the dormant clause of the Federal Constitution which prohibits states to enter into agreements with each other without the consent of Congress. But the very fact that Congress demands such consent, implies that Congress sanctions agreements between states.

The statutes relating to the protection of sturgeon in the Delaware River and Bay were to become operative when similar legislation became operative in the states mentioned. The condition was a future fact, and the statutes failed to designate what authority should designate that fact. Therefore, the Federal precedent which requires that the fulfill-

⁴ Session Laws of Pennsylvania, 1901, p. 186., Laws of New Jersey, chap. 90

⁵ Laws of New Jersey chap., 131.

ment of the condition be certified by an executive officer is to be preferred, because such a provision would materially assist the courts to decide whether the contingency has occurred. In adopting this plan of securing uniform legislation, the law embodying the wishes of the legislature should include the proviso, that it would become operative by a proclamation of the governor of the state, in which he should state that the condition designated in the act has been fulfilled.

If the scheme outlined above would be presented by the governors of the leading industrial states to their legislatures only a short time would elapse before uniform labor and industrial legislation would appear on the statute books of a majority of the states.

In 1911 a movement for uniform preferential primary laws to nominate candidates for the presidency of the United States was started by a few governors of the middle western states. Before spring of the following year, two-thirds of the legislatures had approved similar laws, thereby creating uniformity on that subject.

Along these lines I would urge Your Excellency to recommend to the members of the Fiftieth General Assembly your wishes to obtain agreements between the Legislature of Illinois and the legislatures of Wisconsin, Iowa, Missouri, Michigan, Indiana, and Ohio, according to the scheme outlined above, to secure uniform legislation to embrace some, if not all, of the various labor laws.

If Your Excellency make this recommendation you will earn the gratitude of the employers and employees of this State. It is unreasonable to expect a manufacturer in California, who may employ his female help only 8 hours per day, to compete with a manufacturer in Illinois, who is permitted by law to work his women employees 10 hours per day. In like manner, it is unjust to the female employees in Illinois to be discriminated against, since they may be employed legally 10 hours a day, whereas their sister workers in California are given an advantage of two hours per day. In fact, the case may be presented in a much stronger light, when we state that the women in California are permitted to work only 48 hours per week, while a manufacturer in Illinois may require his female help to work 70 hours per week.

Considering this question from the angle of child labor: In Illinois a child under 16 years of age is not permitted to be employed for more than 8 hours per day between the hours of 7 a. m. and 7 p. m. In Pennsylvania children under 16 years of age may be employed 9 hours per day between 6 a. m. and 8 p. m.

Again we must consider the need of uniformity from the view point of safety. In Illinois all dangerous machinery must be guarded, whereas in Louisiana a man may work at any dangerous machine without any legal protection. If the employee has his hand cut off by a machine in Louisiana and moves to Illinois he becomes a public charge and the people of this State must support a man who was deprived of earning his livelihood in another state, because that other state failed to protect him against loss of life and limb, as our State has been doing.

Two cries are heard the country over for uniformity of labor legislation. One cry comes from the employer, who is justified in stating that his business is injured, because his competitor in another state may employ children or female help in excess of the hours permitted by law

in his own state. The other cry comes from the wage earners, who are equally justified in balking against shorter hours of employment in another state, or the safer conditions of work in another state.

The same argument holds good concerning compensation for injuries. The manufacturer in Illinois pays for the injuries to his workmen under the Compensation Act, while the manufacturer in Arkansas pays none, because that state fails to legislate for industrial injuries.

It is almost inconceivable that we are citizens of but one country, when we stop to consider that within this one country 48 different sets and standards of laws exist; yet manufacturers desire to make as much profit as their competitors in the other states; yet employees want to receive the same wages for the same class of work as are paid in the state having the highest wage-scale.

All are making similar commodities, selling in the same market and all expect the same price. The result is that the men in the states which have lax (or no labor) laws in humanitarian provisions make most money, and the employees get least. No one can contend that this condition is just and equitable. Furthermore, it tends to discourage legislation for the protection of the laboring class.

REGISTRATION.

A bill was introduced at the last session of the Legislature for the purpose of compelling every employer of labor to register once a year with this department. The object of this bill was to secure the names and addresses of all places of business, so that this department could maintain a complete list of all places of employment for the purpose of investigation, and, what is of greater importance to know, what places have been inspected during the year and which were omitted. This is only fair to all employers.

Had this bill passed, employers in this State would have derived a great deal of benefit in more ways than one. In the first place, this department would be able to check up each establishment and make sure that every place is being inspected. As it is at present, some places are inspected several times a year, while others are passed over for a period of several years. This is unfair to the employers of this State. They should demand that this bill be enacted for the reason that it would bear alike on all, and not single out a few, as at present. Secondly, it was the intention of this department to compile and publish these data in the form of an industrial directory, classifying the establishments into industries and showing the names and addresses of each business house under a certain classification. Such a directory is published by the states of New York and Pennsylvania and numerous requests have been received from manufacturers in this State for a similar compilation of industries in Illinois.

The enactment of this bill would have been of benefit only to the manufacturers.

CONCLUSION.

In conclusion I wish to remark that the work of enforcing the laws of this department has been carried on with only one motive in mind, that of carrying out the intentions of each law impartially. In many

cases where some of the orders issued by this department appeared rather stringent and exceptions were taken by the recipients of such orders, they have been invited to meet in conference at this office to discuss all alleged grievances. In every case the matter was subject to a sound debate, which invariably resulted in a better understanding between the department and the owner of the business and in securing his cooperation.

It is surprising to note, when one stops to reflect for a moment, how much humanitarian work is being accomplished by the force of inspectors at the disposal of this department. In addition to that, the fact that these inspectors receive only \$1,200 per year, where they often issue orders involving the expenditure of thousands of dollars, and the State depends upon their honesty and integrity, is worthy of note. For the class of work that these inspectors perform the State should provide better salaries, such as are paid in other states to like positions and to inspectors of liability insurance companies.

OSCAR F. NELSON,
Chief State Factory Inspector.

INSPECTIONS.

RESULTS OF INSPECTIONS ACCORDING TO THE "CHILD LABOR LAW."

The act to regulate the employment of children became effective July 1, 1903. This act repealed "an act to prevent child labor," approved June 17, 1891. The essential features of the present law may be enumerated as follows:

(a) No child under the age of 14 years may be employed at any occupation, except in agricultural pursuits, during such months when the public schools are not in session.

(b) Before employing any child between 14 and 16 years of age every employer must obtain and keep on file an approved age and school certificate containing a correct description of the child and sworn to by the parent or guardian.

(c) Every person employing 5 or more children 14 to 16 years old must post in every room, where children are at work, a list containing the name, age and address of each child.

(d) No child under the age of 16 years shall work more than 8 hours in any 1 day; nor more than 48 hours in any 1 week; and no child shall be permitted to work before 7 o'clock in the morning or after 7 o'clock in the evening.

(e) No child under 16 years of age may be employed in any bowling alley, theater, place of amusement where intoxicating liquors are sold, or as operator of elevators, or at any dangerous machinery, or in any other employment which may be considered dangerous to life or limb, or where its health may be impaired or its morals depraved.

(f) The presence of any child under 16 years of age in any establishment within the scope of this law is prima facie evidence of its employment.

By construction of paragraph "e" or section 11 of the law, the Chief Factory Inspector has prohibited the employment of children under 16 years of age in coal mines and on sewing machines.

The following table shows the results of inspections under the "Child Labor Law" during the year July 1, 1914, to June 30, 1915, in comparison with the preceding year:

TABLE NO. 1—INSPECTIONS UNDER CHILD LABOR LAW.

Comparative for the years July 1, 1913, to June 30, 1914, and July 1, 1914, to June 30, 1915.

Location.	Year.	Number of establishments inspected.	Number of inspections.	Number of employees.						Per cent of children under 16 to total employees.
				Total.	Males over 16.	Females over 16.	Boys 14 to 16.	Girls 14 to 16.	Total number of children under 16.	
Chicago and Cook County..	1914-15	21,486	26,178	404,593	286,282	113,457	2,750	2,104	4,854	1.2
	1913-14	25,154	525,681	379,329	135,486	5,814	4,990	10,866	2.07	
	1914-15	10,774	12,201	134,751	107,018	26,782	625	326	951	.7
Outside of Cook County...	1913-14	10,739	192,104	156,266	34,094	1,014	725	1,744	.9	
	1914-15	32,260	38,379	539,344	393,300	140,239	3,375	2,430	5,805	1.07
	1913-14	35,993	717,785	535,595	169,580	6,828	5,715	12,610	1.7	

The foregoing table states that 38,379 inspections were made in 32,260 establishments located in the various parts of the State. This would indicate an increase of 2,386 inspections over the preceding year. In Cook County 26,178 inspections in 21,486 establishments, an increase of 1,024 inspections over the previous year, are recorded. In cities and towns located outside of Cook County 12,201 inspections in 10,774 establishments, an increase of 1,462 inspections over the preceding year, are credited to the department.

Although the number of inspections for the present year exceed those of the former year, the number of children reported at work has greatly decreased. A total of 12,610 children 14 to 16 years of age were found at work in the entire State during the previous year, whereas the year just ended shows the number to be 5,805, or a decrease of 6,805. In Cook County the decrease amounts to 6,012, the number of children between 14 and 16 years of age employed being 4,854 for the year just ended, against 10,866 for the previous year. In the cities and towns outside of Cook County, 951 children 14 to 16 years of age were found employed during the year completed, while 1,744 children of the same age has been recorded for the preceding year, making a decrease of 793 children.

The percentage of children to the total number of all employees reported for the 32,260 establishments visited is 1.07 per cent, or, in other words, about every one-hundredth employee is a child 14 to 16 years old. This decrease in percentage follows the same downward path as those reported in previous years. The percentage of child labor in Cook County for the past year is 1.2 per cent, as against 2.07 for the preceding year. In towns and cities outside of Cook County the percentage of children to the total number employed was reduced from .9 per cent, for the preceding year, to .7 per cent, for the year just ended.

With reference to the subject of the percentage of child labor in this State, the remarks on pages 12 and 13 of the twenty-first annual report should be consulted.

Table No. 2 presents a summary of inspections according to the "Child Labor Law" in the city of Chicago and Cook County, classified by industries:

TABLE NO. 2.—SUMMARY OF CHILD LABOR INSPECTIONS IN CHICAGO AND COOK COUNTY.

July 1, 1914, to June 30, 1915.

Industry.	Number of establishments.	Total number of employees.	Males over 16.	Females over 16.	Boys 14 to 16.	Girls 14 to 16.	Per cent of children to total employed.
Amusements, places of.....	27	1,374	760	612	2	.....	.15
Art supplies and specialties.....	120	1,482	974	435	22	51	4.93
Auto garages and supplies.....	297	6,169	5,527	614	24	4	.45
Bakeries.....	470	8,427	5,830	2,567	16	14	.47
Banks, insurance, etc.....	20	192	139	47	4	2	3.12
Barbers.....	263	516	463	49	4	.....	.77
Blacksmiths and horseshoers.....	44	121	120	1	.....	.....	.....
Boots and shoes (manufacturing and whole-sale).....	11	4,350	2,805	1,407	69	69	3.17

TABLE NO. 2—Continued.

Industry.	Number of establishments.	Total number of employees.	Males over 16.	Females over 16.	Boys 14 to 16.	Girls 14 to 16.	Per cent of children to total employed.
Boots and shoes (retail).....	293	1,033	830	194	8	1	.87
Bowling alleys, pool and billiards.....	18	68	49	16	3	.....	4.41
Brewers and bottlers.....	76	4,628	4,489	130	7	2	.19
Brick, stone, terre cotta and marble.....	91	4,006	3,935	54	17	.....	1.42
Brooms and brushes.....	43	723	517	195	9	2	1.52
Butter, eggs and cheese (retail).....	36	116	84	31	1	.....	.86
Butter and butterine (manufacturing and wholesale).....	9	1,054	809	241	4	.....	.38
Buttons.....	16	267	150	109	5	3	3.
Carpenters and contractors.....	51	368	317	50	1	.....	.27
Carriages, wagons and trucks.....	20	1,595	1,556	39	.....	.....	.....
China, crockery and glassware.....	26	81	49	31	1	.....	1.23
Cigars, cigarettes, tobacco (manufacturing and wholesale).....	108	3,284	1,715	1,530	7	32	1.19
Cigars, cigarettes, tobacco (retail).....	346	1,353	774	569	3	7	.74
Cleaning and dyeing.....	337	1,553	988	557	6	1	.45
Clothing.....	758	10,530	4,950	5,467	36	77	1.07
Coal, wood, hay, grain, feed, etc.....	290	2,324	2,191	130	3	.....	.13
Commission merchants.....	178	1,538	1,311	207	19	1	1.3
Confectioners.....	150	6,121	3,144	2,530	31	416	7.3
Dental and medical laboratories and supplies.....	34	903	560	263	48	32	8.86
Department stores.....	74	44,103	18,805	24,675	309	314	1.41
Druggists (retail).....	783	2,433	2,088	289	54	2	2.3
Druggists (wholesale).....	36	1,474	940	491	28	15	2.92
Dry goods (retail).....	860	5,009	2,145	2,826	31	7	.76
Dry goods (wholesale).....	12	1,234	1,054	153	21	6	2.19
Educational institutions.....	31	2,851	1,364	1,481	4	2	.21
Electrical goods.....	99	2,301	1,795	481	21	4	1.09
Embroideries.....	46	575	173	372	4	26	5.22
Expressing and storage.....	140	1,038	962	72	4	.....	.38
Five and ten cent stores.....	216	1,499	324	1,168	5	2	.47
Florists.....	184	874	682	161	18	13	3.55
Furniture.....	494	9,734	8,848	802	73	11	.86
Furriers.....	77	405	237	155	13	.....	3.21
Gas and electric company.....	18	1,888	1,581	294	13	.....	.69
Gas and electric fixture company.....	100	1,846	1,457	372	16	1	.92
Glass.....	55	1,109	985	114	8	2	.9
Gloves and mittens.....	28	1,314	566	711	5	32	2.81
Groceries and meat markets.....	2,748	8,120	6,300	1,785	32	3	.43
Groceries and markets (wholesale).....	149	6,052	4,774	1,237	37	4	.68
Hair dressing and manicuring.....	158	554	91	459	1	3	.72
Hardware.....	544	3,712	3,110	557	41	4	1.21
Hats and caps.....	93	1,056	547	490	11	8	1.8
Hotels and rooming houses.....	123	5,887	3,106	2,780	1	.....	.02
Jewelers.....	592	3,940	2,890	959	75	16	2.31
Junk dealers.....	40	294	210	84	.....	.....	.....
Laundries.....	351	7,671	2,238	5,403	11	19	.39
Leather goods.....	169	3,520	3,042	433	24	21	1.28
Liveries, boarding and sale stables.....	79	937	925	12	.....	.....	.....
Lumber yards.....	100	2,803	2,724	115	24	.....	.84
Men's furnishings.....	217	1,353	1,013	331	8	1	.67
Metal trades.....	1,049	57,997	53,005	4,718	185	39	.39
Milk dealers.....	80	1,383	1,338	42	1	22	.1
Millinery.....	54	2,341	685	1,585	29	32	2.61
Musical.....	44	645	560	80	4	1	.77
Newspapers periodicals.....	35	1,502	1,336	146	15	5	1.33
Offices.....	635	4,545	3,275	1,224	47	1	1.06
Packers.....	64	7,137	6,025	1,087	25	.....	.35
Painters, decorators.....	157	907	813	88	6	.....	.66
Paints, oil, varnishes, etc.....	235	2,847	2,353	479	12	3	.53
Paper boxes, etc.....	91	2,889	1,379	1,381	20	109	4.5
Photographs.....	149	1,259	848	398	12	1	1.03
Physicians and surgeons.....	3	6	4	2	.....	.....	.....
Pianos.....	122	5,830	5,334	450	30	16	.79
Plumbers, gas fitters, etc.....	253	4,266	4,028	212	15	11	.61
Printers, publishers, engravers, etc.....	858	19,470	14,330	4,574	416	150	2.91
Railroads, steamship and transportation.....	73	11,713	10,790	883	39	1	.34
Restaurants, lunch rooms.....	1,528	11,786	5,914	5,860	9	3	.1
Roofers, roofing material.....	28	391	363	26	2	.....	.51
Rubber goods.....	21	1,706	711	912	16	67	4.86
Shoe shining and repairing.....	247	467	440	27	.....	.....	.....
Signs.....	62	887	776	102	9	.....	1.01

TABLE NO. 2—Concluded.

Industry.	Number of establishments	Total number of employees.	Males over 16.	Females over 16.	Boys 14 to 16.	Girls 14 to 16.	Per cent of children to total employed.
Soaps, washing powder, etc.....	42	3, 108	2, 213	731	28	136	5.27
Sporting goods.....	22	2, 512	1, 965	543	3	1	.16
Stationers, books, etc.....	205	2, 233	1, 423	732	44	34	3.49
Stores and salesrooms, miscellaneous.....	695	4, 177	2, 779	1, 331	47	20	1.6
Surgical instruments, etc.....	12	602	458	142	2	-----	.33
Teas, coffees, spices.....	369	1, 895	1, 088	786	14	7	1.11
Telegraph and telephone offices.....	53	3, 011	845	2, 002	161	3	5.45
Tents, awnings, shades, etc.....	46	1, 307	904	398	5	-----	.38
Theaters.....	32	671	427	223	9	12	3.13
Theaters, five and ten cent.....	46	577	417	153	6	1	1.21
Unclassified.....	893	22, 735	17, 589	4, 830	152	164	1.39
Undertakers.....	18	149	141	8	-----	-----	-----
Upholsters.....	69	738	574	155	5	4	1.22
Warehouses.....	81	1, 844	1, 708	133	3	-----	.16
Wines, liquors, etc.....	34	267	234	33	-----	-----	-----
Woodworking trades.....	301	8, 749	8, 183	506	38	22	.7
Total.....	21, 486	404, 593	286, 282	113, 457	2, 750	2, 104	1.2

Table No. 2 enumerates 94 industrial classifications, the number of establishments inspected, the number of male and female employees over 16 years of age, the number of boys and girls between the ages of 14 and 16, and the percentage of children to the total number of all persons employed for each industry or kind of business. In 41 of the 94 business classifications the percentage of child labor is greater than the percentage for the entire State, while in 35 of the 94 industrial divisions the percentage of child labor exceeds the percentage recorded for the city of Chicago and Cook County.

The kinds of business in which the percentage of children to total employed is over two-and-one-half per cent, are as follows:

	Per cent.		Per cent.
Dental and medical laboratories.....	8.86	Stationers and books.....	3.49
Confectioners.....	7.3	Furriers.....	3.21
Telegraph and telephone offices.....	5.45	Manufacture of shoes.....	3.17
Soaps and washing powders.....	5.27	Theatres.....	3.13
Embroideries.....	5.22	Banks.....	3.12
Art supplies and specialties.....	4.93	Manufacture of buttons.....	3.
Rubber goods.....	4.86	Wholesale druggists.....	2.92
Paper boxes.....	4.5	Printers, etc.....	2.91
Bowling alleys.....	4.41	Gloves and mittens.....	2.81
Florists.....	3.55	Millinery.....	2.61

It will be noted that most of the leading industrial classifications just listed belong in the blind-alley category.

Establishments in the following 9 industrial divisions in the table employ over 100 children 14 to 16 years old:

	Children.		Children.
Department stores.....	623	Telephone and telegraph offices.....	164
Printers, etc.....	566	Manufacture of shoes.....	138
Confectioners.....	447	Paper boxes.....	129
Metal trades.....	224	Clothing.....	113
Soaps and washing powder.....	164		

Table No. 3 shows the same classification of trades and enterprises in Cook County with the same number of establishments contained in

Table No. 2. In addition to that, Table No. 3 presents the number of first, second, third, fourth, fifth and sixth inspections, and the number of establishments employing 14 or less hands, from 15 to 24 employees, from 25 to 49 employees, from 50 to 74 employees, from 75 to 149 employees, from 150 to 249 employees, from 250 to 499 employees, and such places employing 500 or more.

This table offers a good idea of the inspection work carried on by this department. In the course of the year just ended, 21,486 establishments were inspected, 3,257 received second inspections, in 921 instances third inspections were made, 389 places were visited four times, 120 establishments needed 5 inspections, and 5 employers were checked up 6 or more times.

The second half of the table groups the 21,486 places inspected according to their number of employees. Accordingly, Cook County contains 101 establishments where 500 or more persons are employed; 118 shops and plants had from 250 to 499 workers; 194 places employed from 150 to 249 people; 436 establishments carried from 75 to 149 persons on their pay roll; 414 places of business had from 50 to 74 helpers; 1,028 shops engaged from 25 to 49 employees; 1,021 establishments employed between 15 and 24 persons; and 18,174 places of business had 14 or less.

TABLE NO. 3—RESULTS OF INSPECTIONS UNDER CHILD LABOR LAW IN COOK COUNTY.

July 1, 1914, to June 30, 1915.

Industry.	Number of es- tablishments.	Number of inspections.						Number of establishments employing.							
		Total.	First.	Second.	Third.	Fourth.	Fifth.	Sixth and more.	14 and less.	15 to 24.	25 to 49.	50 to 74.	75 to 149.	150 to 249.	250 to 499. 500 and up.
Amusements, places of ..	27	27	27	.....	.....	.....	.....	.....	22	.....	3	....	1	....	1
Art supplies and special- ties.....	120	129	120	7	1	1	.....	.....	102	5	6	3	2	2	.....
Autos, garages and sup- plies.....	297	331	297	30	4	.....	.....	.....	246	14	17	4	9	.....	2
Bakeries.....	470	1,277	470	333	211	198	65	.....	432	8	7	3	11	6	2
Banks, insurance, etc....	20	20	20	.....	.....	.....	.....	.....	15	3	1	1	.....	.....	1
Barbers.....	263	267	263	3	1	.....	.....	.....	259	3	1	.....	.....	.....	.....
Blacksmiths and horse- shoers.....	44	45	44	1	.....	.....	.....	.....	44	.....	.....	.....	.....	.....	.....
Boots and shoes (manu- facturing and whole- sale).....	11	23	11	6	3	2	1	.....	.....	.....	2	2	2	2	5
Boots and shoes (retail)..	293	316	293	23	.....	.....	.....	.....	284	3	2	2	2	.....	.....
Bowling, pool and bil- iards.....	18	19	18	1	.....	.....	.....	.....	17	1	.....	.....	.....	.....	.....
Brewers and bottlers.....	76	102	76	20	4	2	.....	.....	18	10	15	8	21	3	1
Brick, stone, terre cotta, marble.....	91	102	91	10	1	.....	.....	.....	49	9	9	8	11	4	1
Brooms and brushes.....	43	54	43	9	2	.....	.....	.....	27	8	5	1	2	.....	.....
Butter, eggs, cheese (re- tail).....	36	37	36	1	.....	.....	.....	.....	34	2	.....	.....	.....	.....	.....
Butter and butterine, (manufacturing and wholesale).....	9	10	9	1	.....	.....	.....	.....	3	.....	1	1	1	1	2
Buttons.....	16	29	16	12	1	.....	.....	.....	11	1	2	2	.....	.....	.....
Carpenters and contrac- tors.....	51	56	51	5	.....	.....	.....	.....	48	1	.....	1	1	.....	.....
Carriage, wagons and trucks.....	20	69	20	19	15	10	5	.....	9	2	2	3	2	1	1
China, crockery and glass- ware.....	26	28	26	2	.....	.....	.....	.....	26	.....	.....	.....	.....	.....	.....

TABLE NO. 3—Continued.

Industry.	Number of es- tablishments.	Number of inspections.						Number of establishments employing.							
		Total.	First.	Second.	Third.	Fourth.	Fifth. Sixth and more.	14 and less.	15 to 24.	25 to 49.	50 to 74.	75 to 149.	150 to 249.	250 to 499.	500 and up.
Cigars, tobacco, etc (man- ufacturing and whole- sale).....	108	120	108	12	...	...	...	85	6	8	2	4	1	...	2
Cigars, tobacco, etc (re- tail).....	346	379	346	31	2	...	...	336	4	5	...	...	...	1	...
Cleaning and dyeing.....	337	380	337	38	5	...	...	316	11	7	3	...	...	...	...
Clothing.....	758	857	758	55	25	14	5	606	50	62	17	14	2	6	1
Coal, wood, hay, grain, feed, etc.....	290	316	290	22	4	...	...	253	20	8	5	4	...	...	...
Commission merchants.....	178	182	178	4	...	...	...	154	47	3	2	2	...	...	...
Confectioners.....	150	207	150	35	14	6	1	80	24	21	4	11	7	1	2
Dental supplies, etc.....	34	47	34	11	2	...	...	16	5	6	4	3	...	...	...
Department stores.....	74	110	74	24	9	2	1	37	4	7	5	8	3	1	9
Druggists (retail).....	783	868	783	82	3	...	...	773	4	4	1	...	1	...	...
Druggists (wholesale).....	36	43	36	6	1	...	...	22	1	4	1	4	...	...	...
Dry goods (retail).....	860	1,077	860	115	57	32	12	817	33	10	...	...	...	...	...
Dry goods (wholesale).....	12	16	12	4	...	...	...	8	1	...	...	2	...	1	1
Institutions, etc.....	31	62	31	27	4	...	...	13	1	4	4	5	2	1	1
Electrical goods.....	99	114	99	12	3	...	...	67	10	11	3	4	1	...	...
Embroideries.....	46	55	46	8	1	...	...	38	3	3	...	2	...	...	...
Expressing and storage.....	140	150	140	9	1	...	...	131	6	2	...	...	1	...	...
Five and ten cent stores.....	216	265	216	38	9	2	...	198	8	6	1	1	2	...	...
Florists.....	184	203	184	15	2	1	1	176	2	4	...	2	...	...	...
Furniture.....	494	592	494	91	7	...	...	389	29	30	13	19	7	5	2
Furriers.....	77	127	77	46	4	...	...	74	1	1	...	...	...	...	...
Gas Co.....	18	18	18	...	...	...	...	11	...	3	3	...	...	...	1
Gas and electric fixture.....	100	124	100	21	3	...	...	56	24	11	3	3	3	...	...
Glass.....	55	64	55	9	...	...	...	46	2	2	1	2	1	...	...
Gloves and mittens.....	28	34	28	6	...	...	...	19	...	4	2	1	...	1	1
Groceries and meat mar- kets.....	2,748	2,968	2,748	214	5	1	...	2,714	21	8	2	2	1	...	...
Groceries, etc (wholesale).....	149	160	149	11	...	...	...	107	11	12	6	3	4	2	4
Hair dressing, etc.....	158	163	158	4	1	...	...	151	3	...	...	...	...	...	...
Hardware.....	544	623	544	73	6	...	...	500	15	14	6	6	2	1	...
Hats and caps.....	93	101	93	7	1	...	...	75	9	4	2	3	...	...	...
Hotels, etc.....	123	140	123	16	1	...	...	84	6	12	5	6	4	3	3
Jewelers.....	592	680	592	78	7	3	...	543	24	9	6	9	1	...	...
Junk dealers.....	40	41	40	1	...	...	...	39	...	...	...	...	...	...	...
Laundries.....	351	508	351	119	32	6	...	209	31	55	37	18	1	...	...
Leather goods.....	169	197	169	24	4	...	...	127	14	10	5	9	2	1	1
Liveries, etc.....	79	88	79	9	...	...	...	58	11	9	1	...	...	...	...
Lumber yards.....	100	118	100	16	2	...	...	57	13	14	5	9	1	1	...
Mail order houses.....	32	47	32	12	3	...	...	12	1	2	...	5	4	4	4
Men's furnishings.....	217	245	217	30	1	...	...	209	3	2	1	1	...	...	1
Metal dealers.....	1,049	1,361	1,049	216	51	32	11	574	118	158	46	66	41	22	24
Milk dealers.....	80	90	80	9	1	...	...	53	...	13	9	5	...	...	...
Millinery.....	54	59	54	4	1	...	...	37	1	9	...	3	3	1	...
Music.....	44	46	44	2	...	...	...	38	1	2	2	...	...	1	...
Newspapers, periodicals.....	35	36	35	1	...	...	...	27	1	3	1	2	...	...	1
Offices.....	635	651	635	16	...	...	...	591	17	12	7	4	3	1	...
Packers.....	64	67	64	3	...	...	...	18	8	8	9	4	7	...	2
Painters, decorators.....	157	178	157	21	...	...	...	150	3	2	1	1	...	...	...
Paints, oils, varnishes, etc.....	235	274	235	37	2	...	...	198	9	10	6	12	...	...	...
Paper, paper boxes and bags.....	91	131	91	24	10	5	1	49	14	23	...	...	2	2	1
Physicians and surgeons.....	3	3	3	...	...	...	...	3	...	...	...	...	...	...	...
Pianos, organs, musical instruments.....	122	149	122	22	5	...	...	94	5	5	3	6	3	3	3
Plumbers, gas fitters, etc.....	253	289	253	35	1	...	...	234	7	5	2	1	1	1	2
Photographers.....	149	160	149	11	...	...	...	136	3	...	1	2	1	1	...
Printers, publishers, etc.....	858	1,066	858	163	40	5	...	624	76	73	32	23	16	10	4
Railroads, steamship, etc.....	73	82	73	8	1	...	...	27	5	7	6	5	11	6	6
Restaurants, lunchrooms.....	1,528	2,116	1,528	341	202	38	6	1,408	68	33	6	10	3	...	...
Roofers, roofing material.....	28	32	28	3	1	...	...	19	5	3	...	1	...	...	...
Rubber goods.....	21	27	21	4	2	...	...	10	3	...	...	...	2	1	...
Shoe shining parlors.....	247	480	247	141	56	25	11	247	...	...	...	...	...	...	...
Signs.....	62	67	62	5	...	...	...	56	1	2	...	1	1	1	...
Soaps, washing powders, etc.....	42	52	42	7	3	...	...	30	2	4	1	1	1	1	2
Sporting goods.....	22	24	22	2	...	...	...	16	1	...	2	1	...	1	1
Stationers, books, etc.....	205	223	205	18	...	...	...	184	3	6	7	3	1	1	...
Stores, salesrooms, mis- cellaneous.....	695	789	695	51	41	2	...	652	15	16	5	5	1	1	...

TABLE NO. 3—Concluded.

Industry.	Number of es- tablishments.	Number of inspections.						Number of establishments employing.								
		Total.	First.	Second.	Third.	Fourth.	Fifth.	Sixth and more.	14 and less.	15 to 24.	25 to 49.	50 to 74.	75 to 149.	150 to 249.	250 to 499.	500 and up.
Surgical instruments.....	12	18	12	5	1	.....	.....	.....	5	4	1	.....	1	.....	1	.....
Teas, coffees, spices.....	309	441	309	64	8	.....	.....	.....	355	3	6	2	1	2	.....	.....
Telegraph and telephone offices.....	53	63	53	8	2	.....	.....	.....	30	6	3	5	1	3	.....	5
Tents, awnings, shades, etc.....	46	54	46	8	.....	.....	.....	.....	35	5	2	.....	1	.....	3	.....
Theatres.....	32	39	32	5	2	.....	.....	.....	21	4	4	2	1	.....	.....	.....
Theatres, 5 and 10 cent.	46	52	46	6	.....	.....	.....	.....	37	6	3	.....	.....	.....	.....	.....
Unclassified.....	893	1,009	893	106	10	.....	.....	.....	655	74	77	37	27	11	8	4
Undertakers.....	18	24	18	3	2	1	.....	.....	15	.....	2	1	.....	.....	.....	.....
Upholsterers.....	69	72	69	3	.....	.....	.....	.....	59	2	4	4	.....	.....	.....	.....
Warehouses.....	81	93	81	10	2	.....	.....	.....	38	16	21	4	2	.....	.....	.....
Wines and liquors.....	34	36	34	1	1	.....	.....	.....	28	5	1	.....	.....	.....	.....	.....
Woodworking trades.....	301	392	301	76	14	1	.....	.....	169	32	48	24	16	9	3	.....
Total.....	21,486	26,178	21,486	3,257	921	389	120	5	18,174	1,021	1,028	414	436	194	118	101

Table No. 4 presents the number of inspections, the number of establishments, the number of employees, and the percentage of child labor in the various cities and towns outside of Cook County.

During the year just ended, 240 cities and towns, as against 149 during the preceding year, located outside of Cook County were visited by inspectors in the enforcement of the "Child Labor Law."

In only 74 of the 240 cities and towns visited, establishments are reported by inspectors as employing children between 14 and 16 years of age. The percentage of child labor to the total employed for all cities and towns outside of Cook County is .7 per cent.

Twenty-four of the 74 cities and towns in which children were found at work have a higher percentage of child labor than the percentage for the entire State:

	Per cent.	Children.		Per cent.	Children.
Staunton	33.3	2	Kankakee	1.86	55
Coal City	18.8	55	Carterville	1.8	2
Dundee	11.1	21	Highland	1.79	10
Pontiac	5.47	32	Zion City	1.72	13
Rock Island....	4.05	25	Paxton	1.65	5
Aurora	3.9	58	Kewanee	1.44	3
Peru	2.82	77	Decatur	1.4	94
Lacon	2.63	6	Dwight	1.4	1
Genoa	2.41	5	Normal	1.34	1
Murphysboro ...	2.15	14	Moline	1.34	7
Hampshire	2.13	2	North Chicago...	1.33	21
Mackinaw	1.92	1	Knoxville	1.1	1

In 32 of the cities and towns outside of Cook County visited by our deputies, the percentage of child labor exceeds the percentage of all the cities and towns combined.

In only one city outside of Cook County is the number of children employed in excess of 100—Peoria—for which city 133 children are reported, making a percentage of children to total number of all employees less than that for the entire State and just about the same as that reported for all the cities outside of Cook County combined.

TABLE NO. 4—SUMMARY OF INSPECTIONS ACCORDING TO CHILD LABOR LAW IN CITIES AND TOWNS OUTSIDE OF COOK COUNTY.

July 1, 1914, to June 30, 1915.

City or town.	Number of establishments.	Number of inspections.	Number of employees.						Per cent of children to total employed.
			Total.	Males over 16.	Females over 16.	Boys 14 to 16.	Girls 14 to 16.	Total under 16.	
Abingdon.....	51	53	676	513	160	3		3	.4
Albion.....	4	4	137	137					
Algonquin.....	13	15	141	131	10				
Altamont.....	8	8	48	46	2				
Alton.....	23	23	463	302	161				
Amboy.....	24	23	138	91	47				
Anna.....	63	73	214	154	59	1		1	.5
Arcola.....	57	57	194	173	21				
Area.....	1	1	8	8					
Argo.....	1	1	5	5					
Ashkum.....	2	2	4	4					
Assumption.....	59	59	169	147	22				
Aurora.....	37	43	1,516	722	736	16	42	58	3.9
Bartonville.....	10	10	38	27	11				
Beardstown.....	4	4	42	13	29				
Belleville.....	81	81	2,004	1,639	355	10		10	.4
Belvidere.....	127	151	2,169	1,756	411	1	1	2	.1
Benton.....	56	56	269	215	54				
Bernice.....	1	1	125	125					
Big Foot Prairie.....	1	1	12	12					
Bloomington.....	469	566	5,984	4,664	1,293	24	3	27	.5
Bradley.....	5	5	727	697	25	5		5	.6
Brooklyn.....	1	1	38	38					
Brookport.....	17	17	66	64	2				
Buckley.....	3	3	6	6					
Bunkerhill.....	21	21	43	35	8				
Byron.....	7	7	96	70	26				
Cairo.....	245	288	2,097	1,755	335	6	1	7	.3
Canton.....	148	154	1,847	1,550	287	9	1	10	.5
Capron.....	12	16	51	49	2				
Carbondale.....	77	97	360	184	175	1		1	.4
Carlinville.....	71	73	230	195	33	2		2	.9
Carrollton.....	39	39	142	105	37				
Cartersville.....	29	29	110	77	31	1	1	2	1.8
Carey.....	5	5	23	22	1				
Casey.....	58	58	177	143	34				
Centralia.....	206	245	1,713	1,358	348	5	2	7	.4
Chadwick.....	1	1	3	1	2				
Champaign.....	70	78	1,376	907	465	4		4	.3
Charleston.....	180	184	731	592	136	3		3	.4
Chebanse.....	3	3	9	9					
Chenoa.....	1	1	165	100	65				
Chemung.....	2	3	89	71	18				
Chillicothe.....	16	25	162	116	46				
Chrisman.....	37	37	98	84	14				
Christopher.....	1	1	3	3					
Clifton.....	2	2	4	4					
Coal City.....	5	5	293	131	162	25	30	55	18.8
Collinsville.....	25	25	249	85	162	1	1	2	.8
Crystal Lake.....	17	22	133	106	27				
Danforth.....	2	2	6	6					
Decatur.....	496	543	6,537	5,840	693	51	43	94	1.4
Danville.....	175	225	4,956	3,976	971	5	4	9	.1
DeKalb.....	77	80	1,947	1,720	220	4	3	7	.4
Deerfield.....	1	1	101	101					
Delavan.....	45	45	123	105	18				
Delroy.....	2	2	4	4					
Depue.....	9	9	1,029	1,012	16	1		1	.1
Dixon.....	115	149	1,936	1,509	409	11	7	18	.9
Dundee.....	6	20	190	137	52	21		21	11.1
DuQuoin.....	15	15	75	70	5				
Dwight.....	15	15	72	45	26	1		1	1.4
East Alton.....	1	1	110	107	3				
East Dubuque.....	4	4	12	12					
East Peoria.....	40	51	435	408	27				
East Stockton.....	1	1	55	55					
Edwardsville.....	14	15	101	71	30				
Elmhurst.....	105	108	404	324	79	1		1	.3
Eldorado.....	66	67	1,003	984	19				
Elgin.....	9	20	510	201	305	1	3	4	.8

TABLE NO. 4—Continued.

City or town.	Number of establishments.	Number of inspections.	Number of employees.						Per cent of children to total employed.
			Total.	Males over 16.	Females over 16.	Boys 14 to 16.	Girls 14 to 16.	Total under 16.	
Elizabethtown.....	14	14	30	27	3				
Elmwood.....	32	32	115	95	20				
Eola.....	1	1	18	13	5				
Fairfield.....	90	90	644	297	346		1	1	.2
Fairmount.....	1	1	156	156					
Flora.....	35	35	226	192	33	1		1	.44
Forreston.....	8	8	29	10	19				
Fox Lake.....	3	3	28	28					
Freeport.....	14	14	163	68	95				
Fulton.....	34	45	345	293	52				
Galena.....	89	115	636	488	144	2	2	4	.63
Galesburg.....	346	378	4,571	3,617	934	18	2	20	.44
Garden Prairie.....	1	1	8	8					
Geneseo.....	1	1	140	113	27				
Genoa.....	15	21	207	146	56	2	3	5	2.41
Georgetown.....	7	7	20	16	4				
Gilberts.....	1	1	24	24					
Gilman.....	2	2	4	4					
Glencoe.....	1	1	5	4	1				
Golconda.....	29	29	82	70	12				
Grant Park.....	1	1	106	106					
Grayson.....	1	1	261	261					
Grays Lake.....	1	1	30	30					
Greenup.....	44	44	120	109	11				
Greenville.....	77	77	598	376	221	1		1	.17
Hampshire.....	6	7	94	77	15		2	2	2.13
Hanover.....	6	7	169	138	30	1		1	.6
Harrisburg.....	102	104	1,805	1,748	57				
Hartland.....	1	1	23	23					
Harvard.....	25	25	347	284	63				
Havana.....	4	4	19	6	13				
Henry.....	46	61	165	116	49				
Herrin.....	3	3	10	7	3				
Highland.....	64	64	558	437	111	6	4	10	1.79
Hillsboro.....	95	96	1,094	1,000	93	1		1	.09
Huntley.....	4	4	45	45					
Hoopeston.....	32	32	627	504	121	2		2	.32
Jacksonville.....	27	27	420	167	250	1	1	2	.48
Joliet.....	11	11	411	125	286				
Jonesboro.....	20	20	58	48	10				
Kankakee.....	57	59	2,958	1,837	1,066	16	39	55	1.86
Kewanee.....	9	9	208	78	127	3		3	1.44
Kinmundy.....	8	8	29	29					
Knoxville.....	32	32	91	70	20	1		1	1.1
Lacon.....	32	32	228	160	62	3	3	6	2.63
Lake Forest.....	2	2	26	6	20				
Lanark.....	7	7	30	13	17				
LaSalle.....	55	61	1,608	1,388	215	4	1	5	.31
Ledford.....	1	1	231	231					
Lemont.....	2	2	124	105	18	1		1	.81
Libertyville.....	16	16	190	143	47				
Lincoln.....	16	16	126	48	77	1		1	.8
Litchfield.....	108	108	754	669	84	1		1	.13
Loda.....	1	1	3	3					
Mackinaw.....	15	15	52	43	8	1		1	1.92
Madison.....	1	1	70	70					
Manteno.....	4	4	105	105					
Marengo.....	16	16	69	48	21				
Marion.....	91	93	320	225	95				
Marshall.....	16	26	431	383	48				
Marshall.....	83	85	208	216	51	1		1	.37
Martinsville.....	43	43	138	121	17				
Mattoon.....	314	317	1,479	1,202	271	6		6	.41
McHenry.....	1	1	3	3					
Metropolis.....	74	74	572	500	71	1		1	.17
Millford.....	8	8	74	67	7				
Milledgeville.....	9	9	20	10	10				
Moline.....	11	11	523	81	435	1	6	7	1.34
Momence.....	10	10	210	207	3				
Monroe.....	2	2	4	4					
Morris.....	44	44	1,724	1,635	78	9	2	11	.64
Morrison.....	60	71	352	300	52				
Morton.....	4	4	51	44	7				

TABLE NO. 4—Continued.

City or town.	Number of establishments.	Number of inspections.	Number of employees.						Per cent of children to total employed.
			Total.	Males over 16.	Females over 16.	Boys 14 to 16.	Girls 14 to 16.	Total under 16.	
Mound City.....	39	39	407	373	34				
Mounds.....	38	38	307	282	25				
Mt. Carmel.....	121	121	936	873	63				
Mt. Carroll.....	10	10	35	16	19				
Mt. Morris.....	5	5	96	63	33				
Mt. Olive.....	1	1	4	1	3				
Mt. Vernon.....	3	3	28	13	15				
Murphysboro.....	99	116	641	378	249	14		14	2.15
National City.....	1	1	36	36					
Neoga.....	45	45	123	106	17				
Newton.....	67	67	213	183	30				
Niles Center.....	1	1	125	125					
Nokomis.....	13	13	40	26	14				
Normal.....	21	21	65	55	9				
North Chicago.....	21	21	1,474	1,295	158	20	1	21	1.34
North Chillicothe.....	5	5	147	139	8				
Oakland.....	45	45	132	117	15				
Oglesby.....	2	2	750	742	8				
Olney.....	129	129	570	461	107	2		2	.35
Onarga.....	4	4	307	273	34				
Oregon.....	13	14	335	301	34				
Ottawa.....	88	144	1,900	1,478	417	4	1	5	.26
Otto.....	1	1	3	3					
Pana.....	162	164	529	436	81				
Paris.....	202	217	1,516	1,242	261	8	2	10	.66
Paxton.....	25	26	302	261	36	5		5	1.65
Pekin.....	30	40	640	557	79	3	1	4	.62
Peotone.....	1	1	2	2					
Peru.....	23	23	2,732	2,054	601	38	39	77	2.82
Petersburg.....	4	4	21	2	19				
Pickneyville.....	3	3	6	6					
Pistakee.....	1	1	17	10	7				
Plano.....	19	20	305	288	16	1		1	.32
Polo.....	11	11	55	24	31				
Pontiac.....	32	40	612	405	175	32		32	5.47
Princeton.....	6	6	52	37	15				
Prophetstown.....	21	24	78	65	13				
Peoria.....	1,581	2,144	18,745	14,200	4,352	101	32	133	.71
Rantoul.....	7	7	23	9	13	1		1	
Ravinia.....	2	2	45	27	18				
Richmond.....	6	6	14	12	2				
Ridgefield.....	2	3	17	17					
Ridgewood.....	4	6	29	29					
Riverton.....	2	2	21	21					
Robinson.....	91	92	339	294	45				
Rochelle.....	19	23	248	195	53				
Rockford.....	186	231	8,698	7,015	1,608	62	13	75	.86
Rock Falls.....	38	46	878	822	56				
Rock Island.....	11	11	618	173	420	4	21	25	4.05
Romeo.....	1	1	40	40					
Rossville.....	10	10	40	21	19				
Round Lake.....	1	1	10	10					
Salem.....	83	83	431	374	57				
Sandoval.....	32	32	91	81	10				
Sandwich.....	16	16	386	350	36				
Shawneetown.....	37	37	92	82	10				
Shelbyville.....	159	159	485	402	83				
Shermerville.....	1	1	103	103					
South Beloit.....	6	6	322	215	107				
Solon Mills.....	1	2	2	2					
Savanna.....	71	79	893	800	93				
South Pekin.....	5	5	169	164	5				
Spartanland.....	11	11	29	20	9				
Spring Grove.....	1	2	20	20					
Spring Valley.....	20	20	114	50	64				
St. Anne.....	4	4	57	56	1				
Staunton.....	1	1	6	3	1	2		2	33.33
St. Charles.....	3	3	9	9					
Sterling.....	122	167	1,396	1,066	322	7	1	8	.57
Stickney.....	1	1	100	99	1				
Stockton.....	31	37	160	142	18				
Streator.....	86	96	2,813	2,295	509	9		9	.32
Sullivan.....	104	105	272	240	31	1		1	.37

TABLE NO. 4—Concluded.

City or town.	Number of establishments.	Number of inspections.	Number of employees.						Per cent of children to total employed.
			Total.	Males over 16.	Fe-males over 16.	Boys 14 to 16.	Girls 14 to 16.	Total under 16.	
Sycamore.....	52	52	498	391	106	1		1	.2
Taylorville.....	182	185	764	578	186				
Terra Cotta.....	1	1	280	280					
Tower Hill.....	29	29	71	56	15				
Tucker.....	1	1	2	2					
Tuscola.....	108	108	326	256	69	1		1	.31
Union.....	9	15	68	60	8				
Urbana.....	37	41	895	746	149				
Utica.....	9	9	104	97	7				
Venice.....	2	2	130	130					
Vienna.....	20	20	55	46	9				
Villa Grove.....	1	1	160	160					
Virden.....	45	45	142	110	32				
Warren.....	30	34	101	76	25				
Washington.....	29	29	325	246	79				
Wauconda.....	1	1	5	5					
Waukegan.....	27	28	3,071	2,615	451		5	5	.16
Winnetka.....	1	1	3	2	1				
Woodland.....	1	1	35	35					
Wood River.....	1	2	600	600					
Woodstock.....	60	82	698	607	91				
Yates City.....	2	2	12	6	6				
Yorkville.....	5	5	29	10	10				
Zion City.....	11	11	654	209	432	11	2	13	1.72
Total.....	10,774	12,201	134,751	107,018	26,782	625	326	951	.706

According to this tabulation of the inspectors' reports, none of the large industrial centers in Illinois have a larger percentage of child labor than the percentage for the entire State, with the exception of Chicago.

The following tabulation shows the total number of "age and school certificates" or working permits issued by the Board of Education of the city of Chicago:

Year.	Number of certificates issued.
July 1, 1908, to June 30, 1909.....	12,538
July 1, 1909, to June 30, 1910.....	14,244
July 1, 1910, to June 30, 1911.....	Missing
July 1, 1911, to June 30, 1912.....	13,313
July 1, 1912, to June 30, 1913.....	12,583
July 1, 1913, to June 30, 1914.....	13,633
July 1, 1914, to June 30, 1915—Boys, 6,924; girls, 3,919.....	10,843

The Catholic parochial issuing office granted the following number of working permits:

Year.	Number of certificates issued.
Jan. 1, 1910, to Dec. 31, 1910.....	5,743
Jan. 1, 1911, to Dec. 31, 1911.....	Missing
Jan. 1, 1912, to Dec. 31, 1912.....	5,464
Jan. 1, 1913, to June 30, 1913.....	2,292
July 1, 1913, to June 30, 1914.....	5,363
July 1, 1914, to June 30, 1915.....	4,296

No complete records are available of the number of "age and school certificates" issued by the public school authorities, except in Chicago;

by the Protestant parochial schools of the entire State; and by the Catholic parochial schools outside of the city of Chicago.

RESULTS OF INSPECTIONS ACCORDING TO THE PROVISIONS OF THE HEALTH, SAFETY AND COMFORT LAW.

This law became effective January 1, 1910, and was reenacted by the Forty-ninth General Assembly in 1915, because its validity had been seriously questioned owing to the fact that at the time of its passage, in 1910, there was some slight difference between the Senate and the House Journals. This discrepancy was not discovered, until an employer, who was being prosecuted by this department for violating the provisions of this law, alleged this irregularity in his bill of defense.

During the year, 6,952 establishments were inspected for the purpose of enforcing the provisions of this law. The inspections thus made involved the issuing of official corrective orders, which covered 39,082 hazardous points. Of this number, 3,363 items pertained to defective conditions in and about the factory buildings, 2,808 to sanitation, 5,023 to power transmission, 1,852 to guarding of dangerous machinery, and 26,036 to the elimination of hazardous machinery parts.

A matter of both pride and note is the fact that 29,129 items or about 75 per cent of the total 39,082 items contained in the official orders were complied with during the past 12 months.

Table No. 1 shows in comparative form the results of inspection work under this law.

TABLE NO. 1—COMPARATIVE STATISTICS OF THE RESULTS OF INSPECTIONS ACCORDING TO THE HEALTH, SAFETY AND COMFORT LAW.

For the years July 1, 1913, to June 30, 1914 and July 1, 1914, to June 30, 1915.

Location.	Year.	Number of establishments inspected.	Number of employees.			Number of items in orders complied with.	Number of orders mailed.	Number of items in orders issued pertaining to—					
			Total.	Males.	Females.			Building.	Sanitation.	Power.	Dangerous machinery.	Dangerous machinery parts.	Number of items in orders issued.
Chicago and Cook County.....	1914-15	4,074	117,332	82,464	34,868	17,444	2,651	1,766	1,652	2,269	719	10,983	17,389
	1913-14	3,248	261,745	207,245	54,500	.....	.....	2,828	2,147	2,801	1,894	23,908	33,578
Outside of Chicago and Cook County.....	1914-15	2,878	105,239	95,510	9,729	11,685	1,039	1,597	1,156	2,754	1,133	15,053	21,693
	1913-14	2,537	111,050	98,369	12,680	.....	.....	1,097	836	1,009	768	11,817	15,527
Total for entire State..	1914-15	6,952	222,571	177,974	44,597	29,129	3,690	3,363	2,808	5,023	1,852	26,036	39,082
	1913-14	5,785	372,795	305,605	67,190	.....	.....	3,925	2,983	3,180	2,662	35,725	49,105

Table No. 2, which follows, shows in which cities or towns inspections under this law were made. The number of inspections, orders issued, and employees is presented:

TABLE NO. 2—NUMBER OF INSPECTIONS AND EMPLOYEES IN ESTABLISHMENTS VISITED AS PROVIDED BY THE HEALTH, SAFETY AND COMFORT ACT OUTSIDE CHICAGO AND COOK COUNTY.

July 1, 1914, to June 30, 1915.

City or town.	Number of inspections.	Number of orders issued.	Number of employees—		
			Total.	Males.	Females.
Abingdon.....	5	21	109	105	4
Albion.....	4	37	137	137	.....
Alden.....	1	.....	.....	.....	.....
Algonquin.....	10	41	66	66	.....
Altamont.....	8	89	78	57	21
Alton.....	19	209	1,321	799	522
Amboy.....	4	6	8	5	3
Anna.....	11	67	103	94	9
Arcola.....	12	74	34	31	3
Area.....	1	4	10	10	.....
Assumption.....	9	44	31	31	.....
Aurora.....	8	1	74	12	62
Bartonville.....	1	.....	.....	.....	.....
Belleville.....	12	24	946	938	8
Belvidere.....	34	263	1,779	1,480	299
Benton.....	12	36	38	27	11
Big Foot Prairie.....	1	10	12	12	.....
Bradley.....	1	23	2	2	.....
Byron.....	2	3	11	11	.....
Bloomington.....	41	154	1,722	1,651	71
Blue Island.....	6	74	231	.....	.....
Brookport.....	5	7	3	2	1
Bunker Hill.....	4	8	7	6	1
Canton.....	7	.....	.....	.....	.....
Capron.....	7	41	928	924	4
Cairo.....	65	296	1,295	1,228	67
Carbondale.....	9	41	449	449	.....
Carlinville.....	61	42	48	42	6
Carpentersville.....	3	50	405	398	7
Carrollton.....	7	34	14	12	2
Caterville.....	4	.....	.....	.....	.....
Casey.....	12	68	41	37	4
Centralia.....	33	75	1,203	1,016	187
Champaign.....	31	244	583	488	95
Charleston.....	33	193	257	217	40
Chemung.....	1	.....	.....	.....	.....
Chillicothe.....	4	9	53	50	3
Chrisman.....	5	30	21	20	1
Clinton.....	1	.....	.....	.....	.....
Clyde.....	2	36	250	205	45
Coal City.....	2	19	282	149	133
Crystal Lake.....	3	25	64	64	.....
Danville.....	108	446	3,864	3,455	409
Decatur.....	59	335	2,328	2,164	164
DePue.....	2	20	1,004	1,002	2
Delavan.....	2	.....	.....	.....	.....
Dixon.....	59	948	1,889	1,571	318
Dolton.....	1	.....	.....	.....	.....
Dubuque, East.....	2	.....	.....	.....	.....
Dundee.....	7	65	99	89	10
Dwight.....	6	21	20	19	1
East St. Louis.....	87	1,714	12,753	12,208	545
Edwardsville.....	8	19	428	421	7
Effingham.....	19	151	250	166	84
Edwards.....	14	2	10	10	.....
Elgin.....	16	92	341	301	40
Elizabethtown.....	2	.....	.....	.....	.....
Elmhurst.....	1	33	92	92	.....
Elmwood.....	3	6	15	15	.....
Eola.....	1	.....	.....	.....	.....
Fairfield.....	16	180	450	120	330
Fairmont.....	1	9	156	156	.....
Flora.....	13	33	87	81	6
Forreston.....	3	9	10	3	7
Fox Lake.....	5	23	27	27	.....
Freeport.....	12	139	1,531	1,288	243
Fulton.....	8	38	317	295	22
Golconda.....	3	.....	.....	.....	.....
Galena.....	34	129	297	236	61
Galesburg.....	23	19	56	38	18
Garden Prairie.....	1	12	8	8	.....
Geneva.....	5	21	230	223	7
Genoa.....	8	16	157	130	27

TABLE NO. 2—Continued.

City or town.	Number of inspections.	Number of orders issued.	Number of employees.		
			Total	Males.	Females.
Georgetown.....	3	8	7	7	.....
Gilberts.....	1	12	24	24	.....
Girard.....	5	7	10	10	.....
Goodall.....	1	6	4	4	.....
Granite City.....	8	142	5,589	5,417	172
Grays Lake.....	2	30	105	97	8
Greenfield.....	5	21	9	9	.....
Greenup.....	4	28	24	22	2
Greenview.....	2	.....	.....	.....	.....
Greenville.....	22	165	383	198	185
Hampshire.....	6	20	13	12	1
Hanover.....	2	52	256	206	50
Harrisburg.....	20	39	58	58	.....
Hartland.....	1	14	23	23	.....
Harvard.....	12	96	368	334	34
Hebron.....	2	9	43	43	.....
Herrin.....	7	20	25	17	8
Highland.....	16	209	341	252	89
Hillsboro.....	19	137	834	785	49
Hoopeston.....	22	177	546	471	75
Huntley.....	5	29	44	44	.....
Jerseyville.....	18	53	336	182	154
Johnson City.....	4	17	18	18	.....
Joliet.....	4	45	225	224	1
Jonesboro.....	2	42	24	22	2
Johnsburg.....	1	7	3	3	.....
Kane.....	1	.....	.....	.....	.....
Kankakee.....	25	663	1,647	1,310	337
Kewanee.....	9	92	2,705	2,562	143
Kinmundy.....	8	21	12	12	.....
Knoxville.....	1	2	4	3	1
Lacon.....	2	4	117	72	45
Ladd.....	1	6	77	77	.....
Lake Forest.....	2	24	26	22	4
Lanark.....	4	3	5	3	2
LaSalle.....	17	107	306	274	32
Leford.....	1	.....	.....	.....	.....
Libertyville.....	7	26	16	13	3
Litchfield.....	17	98	404	396	8
Mackinaw.....	1	5	11	10	1
Madison.....	4	85	2,360	2,360	.....
Marengo.....	11	47	44	40	4
Marion.....	22	118	142	98	44
Marseilles.....	14	132	496	468	28
Marshall.....	17	160	64	61	3
Martinsville.....	6	52	20	1	19
Mattoon.....	92	329	1,558	1,510	48
McHenry.....	1	.....	.....	.....	.....
Mendota.....	6	.....	.....	.....	.....
Metropolis.....	19	84	338	309	29
Milledgeville.....	4	23	9	7	2
Milford.....	4	40	61	59	2
Moline.....	26	968	5,137	5,007	130
Momence.....	6	90	201	198	3
Montgomery.....	3	75	197	190	7
Morris.....	23	195	608	567	41
Morrison.....	17	54	235	225	10
Morton.....	10	12	24	24	.....
Mound City.....	15	78	543	525	18
Mt. Carmel.....	22	224	617	605	12
Mt. Carroll.....	4	15	9	9	.....
Mt. Morris.....	1	20	80	55	25
Mt. Vernon.....	29	150	1,503	1,331	172
Murphysboro.....	21	208	977	837	140
National City.....	1	6	36	36	.....
Neoga.....	8	72	26	24	2
New Athens.....	1	11	70	70	.....
Newton.....	20	155	73	67	6
North Chicago.....	31	261	1,505	1,237	268
Oakland.....	11	84	32	31	1
Oglesby.....	2	166	750	742	8
Olney.....	31	53	53	50	3
Onarga.....	1	.....	.....	.....	.....
Oregon.....	9	56	309	292	17
Ottawa.....	71	396	1,434	1,262	172
Pana.....	21	125	82	64	18
Paris.....	38	323	762	688	74

TABLE NO. 2—Concluded.

City or town.	Number of inspections.	Number of orders issued.	Number of employees.		
			Total.	Males.	Females.
Paxton.....	10	55	128	112	16
Pekin.....	11	93	1,006	996	10
Peoria.....	103	148	957	854	103
Peotone.....	2	45	4	4	.....
Perru.....	18	265	1,829	1,201	628
Plano.....	12	35	28	24	4
Polo.....	6	29	28	17	11
Pontiac.....	20	139	591	462	129
Princeton.....	1	3	10	10	.....
Prophetstown.....	3	27	52	48	4
Quincy.....	202	2,423	8,963	8,352	611
Rantoul.....	1	.....	.....	.....	.....
Ridge Farm.....	2	.....	.....	.....	.....
Ridgefield.....	1	1	15	15	.....
Ringwood.....	2	14	25	25	.....
Robinson.....	22	183	128	121	7
Rochelle.....	9	63	178	164	14
Rock Falls.....	20	194	1,173	1,087	86
Rockford.....	52	828	3,229	2,923	306
Rock Island.....	3	296	396	386	10
Rockton.....	2	.....	.....	.....	.....
Romeo (Lockport).....	1	19	40	40	.....
Rossville.....	5	16	8	5	3
Round Lake.....	1	11	10	10	.....
Salem.....	15	29	19	18	1
Sandoval.....	2	13	18	18	.....
Sandwich.....	10	86	330	326	4
Stanville.....	1	.....	.....	.....	.....
Savanna.....	19	78	102	87	15
Shawneetown.....	2	3	3	3	.....
Shelbyville.....	23	102	73	72	1
Silvis.....	2	1	1,400	1,400	.....
Solon Mills.....	2	5	2	2	.....
Springfield.....	3	.....	.....	.....	.....
Spring Grove.....	2	22	20	20	.....
Spring Valley.....	7	17	65	18	47
Steger.....	1	.....	.....	.....	.....
Sterling.....	66	314	1,375	1,258	117
Stockton.....	11	36	81	75	6
Streator.....	53	476	2,586	2,385	201
St. Charles.....	7	76	148	130	18
Sullivan.....	25	178	90	77	13
Sycamore.....	19	119	240	191	49
Tamms.....	1	5	10	10	.....
Taylorville.....	24	52	68	67	1
Terra Cotta.....	1	18	275	275	.....
Tower Hill.....	3	3	3	3	.....
Tuscola.....	13	90	55	49	6
Union.....	4	28	38	34	4
Urbana.....	16	153	634	617	17
Utica.....	4	29	89	85	4
Venice.....	5	29	369	369	.....
Vienna.....	3	9	2	2	.....
Viriden.....	9	32	27	27	.....
Warren.....	4	29	44	42	2
Washington.....	3	.....	.....	.....	.....
Warseka.....	7	34	45	32	13
Waukegan.....	30	261	2,001	1,746	255
Wheaton.....	1	33	70	70	.....
Woodland.....	1	12	35	35	.....
Wood River.....	1	33	620	620	.....
Woodstock.....	19	123	949	870	79
Yorkville.....	3	32	7	5	2
Zion City.....	5	65	517	207	310
Total.....	2,878	21,693	105,239	95,510	9,729

Table No. 3 classifies the various orders issued to establishments located in Cook County and in the other 101 counties according to the 5 main groups, which are subdivided into points of danger:

TABLE NO. 3—ANALYSIS OF ALL ORDERS

July 1, 1914, to June 30, 1915.

Classification of orders.	City and Cook County.	State outside Cook County.	Total.
1. Building—			
1. Exits and fire escapes.....	42	39	81
2. Doors, slide and roll.....	26	20	46
3. Stair treads.....	80	82	162
4. Handrails and toeboards.....	973	782	1,755
5. Openings in floors.....	89	190	279
6. Elevators, automatic gates and slant boards.....	243	177	420
7. Elevator cars.....	162	162	324
8. Safety devices.....	3	4	7
9. Proper light.....	30	19	49
10. Heating system.....	11	9	20
11. Passageways and obstructions.....	45	37	82
12. Dangerous places.....	62	76	138
	1,766	1,597	3,363
2. Sanitation—			
1. Toilets.....	621	642	1,263
2. Washing, dressing and dining rooms.....	347	153	500
4. Seats for females.....	17	15	32
6. Proper ventilation.....	286	7	293
7. Remove dust and fumes.....	108	94	202
8. Rooms, clean dry and sanitary.....	32	4	36
9. Install and guard fans and blowers.....	83	104	187
10. Guard ovens, furnaces, forges, vats, pans, etc.....	158	137	295
	1,652	1,156	2,808
3. Power—			
1. Engine stops or disengaging devices.....	156	333	489
2. Signal system.....	34	28	62
3. Belt shifters.....	303	93	396
4. Boiler and engine room.....	199	199	398
5. Clutches, couplings and weights.....	484	262	746
6. Switches and throttles.....	16	34	50
7. Dynamos and motors.....	38	25	63
8. Electric appliances and wiring.....	54	173	227
9. General orders.....	947	1,585	2,532
10. Eccentrics and crank shafts.....	8	8	16
11. Miscellaneous.....	30	14	44
	2,269	2,754	5,023
4. Dangerous Machinery—			
1. Hydro extractors.....	57	30	87
2. Mangles, metal rolls, drums, crushers and tumblers.....	77	157	234
3. Band saws.....	117	177	294
4. Circular saws.....	217	320	537
5. Planers.....	10	4	14
6. Shapers.....	22	33	55
7. Jointers.....	70	83	153
9. Sticklers and mortisers.....	72	31	103
10. Trip hammers, bulldozers and shears.....	34	74	108
11. Printing presses.....	28	1	29
12. Looms, spindles and shuttles.....	15	223	238
	719	1,133	1,852
5. Dangerous Machinery Parts—			
1. Fly wheels.....	1,239	1,656	2,895
2. Punch and drill presses at point of work.....	124	48	172
3. Planer and shaper beds under platen.....	82	139	221
4. Pipe machines and turret lathes.....	8	16	24
5. Gears.....	2,048	3,160	5,208
6. Belts and pulleys.....	4,856	7,083	11,939
7. Sprocket and chains, also screw conveyors.....	457	556	1,013
8. Shafting and roll bearings.....	855	730	1,585
9. Exposed set screws, bolts and keys.....	666	1,139	1,805
10. Emery wheels.....	615	494	1,109
11. Cranes.....	15	30	45
12. Cutters, feather and leather splitters, etc.....	18	2	20
	10,983	15,053	26,036
Total.....	17,389	21,693	39,082

Table No. 4 shows the number of dangerous items upon which orders were issued to establishments located in cities and towns outside of Cook County. The table contains 5 groups or danger zones, which are subdivided into 58 district items of hazards:

TABLE NO. 4—ANALYSIS OF ORDERS IN TOWNS OUTSIDE OF CHICAGO AND COOK COUNTY.

July 1, 1914, to June 30, 1915.

Classification of orders.	Abington.	Albion.	Alconquin.	Altamont.	Alton.	Amboy.	Anna.	Arcola.	Area.
1. Building—									
1. Exits and fire escapes.....									
2. Doors, slide and roll.....									
3. Stair treads.....		1			2				
4. Handrails and toeboards.....	2	2	2	2	2	1			
5. Openings in floors.....					5				
6. Elevators, automatic gates and slant boards.....					5		1		
7. Elevator cars.....	1						1		
8. Safety devices.....							1		
9. Proper light.....				1			1		
10. Heating system.....									
11. Passageways and obstructions.....									
12. Dangerous places.....									
2. Sanitation—									
1. Toilets.....	2	2		2	3		3		
2. Washing, dressing and dining rooms.....				1	4				
4. Seats for females.....									
6. Proper ventilation.....									
7. Remove dust and fumes.....					1				
8. Rooms, clean, dry and sanitary.....					2				
9. Install and guard fans and blowers.....									
10. Guard ovens, furnaces, forges, vats, pans and etc.....									
3. Power—									
1. Engine stops or disengaging devices.....		1		1			2		
2. Signal systems.....									
3. Belt shifters.....					4				
4. Boiler and engine room.....			4	2	1		1		
5. Clutches, couplings and weights.....	2				1				1
6. Switches and throttles.....									
7. Dynamos and motors.....									
8. Electric appliances and wiring.....		3		1	3	1			
9. General orders.....		4		8	2		6	9	1
10. Eccentrics and crank shafts.....									
12. Miscellaneous.....									
4. Dangerous Machinery—									
1. Hydro extractors.....					1				
2. Mangles, metal rolls, drums, crushers and tumblers.....					1				
3. Band saws.....				1					
4. Circular saws.....		1			1		1	1	
5. Planers.....								1	
6. Shapers.....									
7. Jointers.....									
9. Sticklers and mortisers.....									
10. Trip hammers, bulldozers and shears.....									
11. Printing presses.....									
12. Looms, spindles and shuttles.....									
5. Dangerous Machinery Parts—									
1. Fly wheels.....				5	36	3	7	11	
2. Punch and drill presses.....					5				
3. Planer and shaper beds under platen.....					3		1		
4. Pipe machines and turret lathes.....									
5. Gears.....	3	8	5	10	41		7	13	
6. Belts and pulleys.....	2	19	18	46	63		23	24	2
7. Sprockets and chains, also screw conveyors.....		4	2	6	11		4		
8. Shafting and roll bearings.....			2		2			4	3
9. Exposed set screws bolts and keys.....	10	2	1	2	10	1	2	10	
10. Emery wheels.....									
11. Cranes.....									
12. Cutters, feather and leather splitters and etc.....									
Total.....	22	47	40	90	208	6	66	73	4

TABLE NO. 4—Continued.

Classification of orders.	Assumption.	Aurora.	Belleville.	Beloit.	Belvidere.	Benton.	Big Foot Prairie.	Bradley.	Byron.	Bloomington.	Blue Island.	Brookport.	Bunker Hill.	Capron.	Cairo.	Carbondale.	Carlinville.
<i>1. Building—</i>																	
1.....																4	
2.....																1	
3.....	1													1		1	
4.....	3							7			2	2		3		20	4
5.....					1						4					1	
6.....			1		2						1					6	
7.....					1						3					4	
8.....			1														
9.....																	
10.....																2	
11.....																	
12.....			2							3							
<i>2. Sanitation—</i>			1		3		1	1						1	5	1	
1.....			3		1	1				1	3			1	16	2	3
2.....			3			1									4	1	
4.....		1													2		
6.....																	
7.....										1					1		
8.....																	
9.....					1		1					1					
10.....	1									3	1			1	1		
<i>3. Power—</i>																	
1.....	1										3				4	1	
2.....														1			
3.....															1		
4.....	1										3				1		1
5.....			1		1			2	1		2			1			
6.....																	
7.....														1			
8.....						1				1	1				2	1	
9.....	6		3	5	15	4	1	2	1	2	4		1	4	13	2	6
10.....																	
12.....										1							
<i>4. Dangerous Mach.—</i>																	
1.....																	1
2.....			1														
3.....				2	1								1		5	1	1
4.....	1				3					1					2		3
5.....																	
6.....																	
7.....																	1
9.....														1	1		2
10.....																	
11.....																	
12.....																	
<i>5. Dangerous Machinery Parts—</i>																	
1.....	5			10	5	7	1				5	2	1	4	8	1	10
2.....																	
3.....															4	1	
4.....											7						
5.....	8		1	5	107	16	2			37	15	1	3	3	24	8	1
6.....	9			5	68	25	4	6	1	72	19	3	2	12	103	12	23
7.....	1				1	1		3		5					6	3	
8.....	1			2	5	1		1						3	11	2	3
9.....	3				9	8		1		9	3			3	17	3	
10.....					3						2		1		2	2	1
11.....										1							
12.....																	
Total.....	41	1	17	27	230	65	10	23	3	154	71	7	9	40	271	41	60

TABLE NO. 4—Continued.

Classification of orders.	Carpenterville.	Carrollton.	Casey.	Centralia.	Champaign.	Chillicothe.	Chrisman.	Clyde.	Coal City.	Crystal.	Danville.	Decatur.	DeKalb.	DePue.	Dixon.	Dundee.	Dwight.
1. Building—																	
1.....											2	2					
2.....													2				
3.....	1			1	1						5		3		1		
4.....		2		1	14		1		3		18	6	27	3	11	19	
5.....	1			2	2					1	5	9	7		3		
6.....				3	3						7	2	1	1	3	1	
7.....				1							3	9	6				
8.....																	
9.....												1	1				
10.....					2						1						
11.....					1								1				
12.....					1		1								1		
2. Sanitation—																	
1.....	1		2	3	9	1		1	1		24	9	20	1	8		
2.....					3						11		3		5		
3.....											1						
4.....																	
5.....																	
6.....																	
7.....	1			1	1						3		3		2		
8.....																	
9.....					5						3	1	1		1		
10.....			1		6						6	2	1		3		
3. Power—																	
1.....	1										1	1			224		
2.....											1				1		
3.....					1								1		1		
4.....					1					1	8		6		1		
5.....	1	1	1	4							3	1	5	1	3	1	
6.....																	
7.....											2						
8.....			1	1	2					1	6		1	5	2		
9.....	4	3	11	10	34	5			2	3	66	7	27	2	28	9	4
10.....					1						1	1					
12.....											1						
4. Dangerous Mach.—																	
1.....					1							1			1		
2.....						1					3	1	4				
3.....		2	2								6	2	10		4		
4.....					4						17	9	19		10		
5.....																	
6.....					2						1	1	1		1		
7.....					1						3	1	4		8		
8.....																	
9.....	2										1	1	2				2
10.....																	
11.....															2		
12.....															223		
5. Dangerous Machinery Parts—																	
1.....	5		13	7	33		6	16			17	4	20	2	21	3	1
2.....	1				1	1		1			1						
3.....	1				1	1	1				13	4	2	1	4		
4.....																	
5.....	12	6	9	11	28		4	2	4	4	35	31	94	2	263	8	1
6.....	21	8	19	27	52		12	12	5	12	109	171	76		67	18	7
7.....		6		1			1				2		20		2	1	
8.....					13		3	1	44	4	20		1	19		4	
9.....	1		3	4	15	3	1	1	1	1	23	50	11	1	17	4	3
10.....		1	3	2	3		3	2		1	2	1	10		2		
11.....						1						1					
12.....																	
Total.....	50	30	65	76	242	10	31	35	19	25	453	233	415	20	942	64	22

TABLE NO. 4—Continued.

Classification of orders.	East St. Louis.	Edwardsville.	Effingham.	Eldorado.	Elgin.	Elmhurst.	Elmwood.	Fairfield.	Fairmount.	Flora.	Forreston.	Fox Lake.	Freeport.	Fulton.	Galena.	Galesburg.	Garden Prairie.
1. Building—																	
1.....	3							1							1		
2.....	4							1									
3.....	4					2		2									
4.....	79	1			16	11		7				3	1	1	7		
5.....	8	1			1			4	1							1	
6.....	8	2						1					1		1		
7.....	13	1											3				1
8.....																	
9.....	1																
10.....	1																
11.....	3																
12.....					1										1		
2. Sanitation—																	
1.....	58	1	7		2	1		8		4	2		2	3	6		
2.....	8	1			1									2	1		
3.....																	
4.....																	
5.....	1												1				
6.....	1												1				
7.....	5				2												
8.....																	
9.....	14							1									
10.....	21		4					1							1		
3. Power—																	
1.....	7				1	1		1									
2.....	3																
3.....	9																
4.....	28		2					4					1				
5.....	40		1		2			1					3	1			1
6.....	4							1									
7.....																	
8.....	10							2					2	1	1		
9.....	89	1	14		5	4		20	1	2	2	3	16	5	16		1
10.....	4																
12.....	3		2														
4. Dangerous Mach.—																	
1.....	1							1							1		
2.....	1												1				
3.....	6			1				2					2		1		
4.....	10		3					1					2	1		3	
5.....																	
6.....																	
7.....	2		1					2									
8.....																	
9.....																	
10.....	1												1				
11.....																	
12.....																	
5. Dangerous Mach. Parts—																	
1.....	73	1	15		1	1		17	1	2	3		6	16	9		
2.....																	
3.....	5	2		1									1		3		
4.....										4							
5.....	299	6	27		13	3		15	1	2	1	2	20		26	1	2
6.....	860	6	48		31	7	1	58	5	12		8	75	6	25	4	6
7.....	169		3		6	1		12		3					1		
8.....	43		4		2		1	3	1	1	1	1	2	1	8		
9.....	62	1	4		7		1	4	10		2	2	2	1	14	10	1
10.....	14	1	7			1			3				1	1	6		
11.....	2								1								
12.....			1														
Total.....	1,978	19	153	2	92	33	6	180	9	33	9	23	144	38	129	19	12

TABLE NO. 4—Continued.

Classification of orders.	Geneva.	Genoa.	Georgetown.	Gilberts.	Girard.	Goodall.	Granite City.	Grays Lake.	Greenfield.	Greenup.	Greenville.	Hampshire.	Hanover.	Harrisburg.	Hartland.	Harvard.	Hebron.
1. Building—																	
1.....																	
2.....																	
3.....							1	1	2	1	1	2		1	1	2	
4.....					1		1	1		2				1		1	
5.....							1			2						2	
6.....							1	1		1						2	
7.....							1										
8.....																	
9.....																1	1
10.....																	
11.....							1										
12.....											1						
2. Sanitation—																	
1.....		1				1	16			1	4		1	3		3	
2.....							1							2			
3.....																1	
4.....							1										
5.....																	
6.....																	
7.....																	
8.....						1											
9.....															1	1	
10.....	1										3						
3. Power—																	
1.....	1												1	1			
2.....							1										
3.....							1										
4.....							4			1							
5.....	1						5				1						
6.....																	
7.....											1						
8.....							2	2			3			2	1	1	
9.....		3	2	1			2	2	1	4	16	3		6	1	1	2
10.....																	
11.....																	
12.....																	
4. Dangerous Mach.—																	
1.....											1						
2.....																	
3.....	1						1				8						
4.....			1				4				1	1	1	2		2	
5.....																	
6.....																	
7.....																	
8.....											2						
9.....	1																
10.....																	
11.....																	
12.....																	
5. Dangerous Machinery Parts—																	
1.....		2			1		17		2	4	22	1		3	2	17	
2.....																	
3.....					1		1										
4.....																	
5.....		4		3			40	2	3	2	23	4	36	2	1	7	1
6.....		1	4	6	2	3	37	16	10	7	51	3	3	11	5	50	3
7.....		1						5	2		4			4			
8.....		2		1						1	3	2	1			1	
9.....		2				2	5	1		4	10	3	7	1	1	4	2
10.....				1	1		1		1		8	1	1			2	
11.....							2				1						
12.....																	
Total	5	16	7	12	7	6	153	30	21	28	165	20	51	39	13	96	9

TABLE NO. 4—Continued

Classification of orders.	Herrin.	Highland.	Hillsboro.	Hoopeston.	Huntley.	Jerseyville.	Johnston City.	Joliet.	Jonesboro.	Johnsburg.	Kankakee.	Kewanee.	Kimondy.	Knoxville.	Lacon.	Ladd.	Lake Forest.
1. Building—																	
1.....						1					1						1
2.....		1	1														
3.....		5	1								2						
4.....		5	10	7	2		2	2	3		16	5					1
5.....		1	1	1				1			3						
6.....		1		1							10						
7.....				1							2	1					
8.....																	
9.....				1													
10.....				1													
11.....											3						
12.....			1	1							1						
2. Sanitation—																	
1.....	1	6	5	4		3		3	1		15	4			1		2
2.....			1								6	1					1
3.....																	
4.....																	
5.....											1						
6.....				2							6						
7.....																	
8.....																	
9.....			1	4	1						1	3					
10.....		2	4					2			3	1				1	
3. Power—																	
1.....		1							2		7						
2.....											3						
3.....											19						1
4.....		1	1	1	3		2				5						1
5.....		3	6	6							10	1		1			1
6.....																	
7.....											1						
8.....		2	3	1		1	1				1						
9.....	4	16	19	23		9	3	5	2	1	31	17	4			1	2
10.....		1															
11.....																	
12.....																	
4. Dangerous Mach.—																	
1.....	1														1		
2.....									1								
3.....		3		1		2					3		1				
4.....		3		1		4					9	1					
5.....																	
6.....																	
7.....		2			1								1				
8.....											1						
9.....												2					
10.....																	
11.....																	
12.....																	
5. Dangerous Machinery Parts—																	
1.....	1	23	8	57	4	11	3		1		47	2	1				4
2.....																	
3.....		1									1	2					
4.....																	
5.....	3	31	17	13	2	5	2	2	3		87	14	4			2	3
6.....	5	75	44	43	15	19	4	15	22	4	307	31	6		1	1	5
7.....		13	1	2		1	1				20						
8.....		3		11	1	1		4			12	2					
9.....		5	7	4	7	2	4		2	1	13	1	1	1	1		2
10.....			4	5							16	2	3			1	
11.....				1				1									
12.....																	
Total.....	20	208	137	189	29	63	17	41	39	7	663	90	21	2	4	6	21

TABLE NO. 4—Continued.

Classification of orders.	Lanark.	La Salle.	Libertyville.	Litchfield.	Mackinac.	Madison.	Marengo.	Marion.	Marsilles.	Marshall.	Martinsville.	Mattoon.	Metropolis.	Milledgeville.	Milford.	Moline.	Noneac.
1. Building—																	
1.....																	3
2.....																	1
3.....		1		1				2	1			1					1
4.....	1	6	1	2	1	4	1	5	16	4	2	6	2	2		1	1
5.....																	4
6.....		2		1				2	2			3					1
7.....							2	2	1							9	1
8.....												1					
9.....																	
10.....																	
11.....						1						1				2	
12.....				2			2	6					1			1	
2. Sanitation—																	
1.....		3		2		3		5	4	3		24	4		3	9	3
2.....		3						1	1			2			2	3	4
3.....													1				
4.....																1	
5.....												5	1			12	2
6.....								1	1	2							
7.....																1	
8.....																	
9.....				1		1				1						1	
10.....				1		2				1	1	1				16	
3. Power—																	
1.....				1				1		1	1	1	2				1
2.....												2				2	4
3.....																	
4.....		1					3	1	1			9			1	1	1
5.....				3		3			4			1			2	15	
6.....												1				12	1
7.....																	
8.....		1				1	2	2	2	2		5				7	2
9.....	1	12	5	13		3	1	12	8	16	5	32	4	4	4	22	5
10.....											1						
11.....																	
12.....																	1
4. Dangerous Mach.—									1		1	1				4	
1.....		7										2				10	1
2.....		1			1		1		1	4		6	3			1	1
3.....						1	2	1		3	1	3	6			20	3
4.....																	
5.....																	
6.....																	
7.....		1			1	1	1			2		2	1				1
8.....																	
9.....																	
10.....		1														43	
11.....																	
12.....																	
5. Dangerous Machinery																	
Parts—																	
1.....		3		9		23	1	9	11	19	5	27	4	4	4	49	8
2.....																4	1
3.....		2	1			1			3			1	2			9	1
4.....																	
5.....		22	5	19		11	2	19	24	25	6	36	8	1	5	132	7
6.....		24	3	31	2	22	23	37	35	51	20	116	31	6	1	382	29
7.....		1	2	3		4	2	7	1	8	2	2	2		16	7	
8.....		9	3	2		2	1	2	8	2	1	6	3			89	7
9.....	1	3	4	2		2	3	4	6	9	5	23	6	4	2	66	2
10.....		1	2	3		1	3	1	4	4	2	7	1			16	4
11.....				1		2						1					
12.....																	
Total.....	3	106	26	98	5	90	49	123	133	159	52	325	84	21	40	977	90

TABLE NO. 4—Continued.

Classification of orders.	Montgomery.	Morris.	Morrison.	Morton.	Mound City.	Mt. Carmel.	Mt. Carroll.	Mt. Morris.	Mt. Vernon.	Murphysboro.	National City.	Neoga.	New Athens.	Newton.	North Chicago.	Oakland.	Oglesby.
1. Building—																	
1					1	2											
2																	
3		3				1						2					1
4	2		5	1	2	11			1	2			4		6		15
5		5	1			2			4	2					3		1
6		1	1		1	1			3	2					2		
7									4	1					8	1	
8									2								
9																	
10																	
11									1	1							
12					3					2							
2. Sanitation—																	
1		6	1		16	6			8	5			1	1	8		3
2		1	1		1			1	3	2					4		
3																	
4																	
5																	
6																2	
7	1							1	2						2		
8									1	1							
9		1	1		1	1									3		2
10									4								
3. Power—																	
1					2	1			1	2							
2									1								
3	1					1									4		
4						3			4	2					1		
5			1			1			5	1					12		2
6															1	4	
7																	
8		2	1		1	3			1	2							2
9	1	17	7	1	3	26	4	1	10	15	1	8		20	8	10	2
10																	
11																	
12																	
4. Dangerous Mach.—																	
1									1								
2	1					1									42		9
3		2	1	1		1	1		1	1				1	1		
4		2	3	1	1	1	1		1	2		2	1	2	2		
5																	
6																	
7				1	1	1			1	1				1			
8																	
9		1													3	1	
10																	
11																	
12																	
5. Dangerous Machinery Parts—																	
1	23	15	4		2	13	1	8	20	16		8		22	20	15	
2									1						1		
3					1				1	3					1		2
4																	
5	2	26	7		8	31	1	3	21	32	2	10	5	16	19	17	27
6	40	77	14	4	33	87	4	6	27	79	1	30	4	58	79	26	69
7					3	5			2	24				3			1
8	2	11	5		2	2	1		3	4		1		5			6
9	2	11	2	2	5	14	1		12	5		6		10	9	5	5
10		6		1	2	5	1		7	4	2	2		4	20	5	1
11						1			1								
12																	
Total.....	75	194	54	12	88	225	15	20	150	208	6	73	11	153	269	84	156

TABLE NO. 4—Continued.

Classification of orders.	Olney.	Oregon.	Ottawa.	Pana.	Paris.	Paxton.	Pekin.	Peoria.	Pectone.	Peru.	Plano.	Polo.	Pontiac.	Princeton.	Prophetstown.	Quincy.	Ridgfield.
1. Building—																	
1.....							1	1								10	1
2.....								1								13	
3.....	1		3		2											14	
4.....	2	5	18	4	11		10	5	11	2						42	
5.....			3	1	1			2	2	2						38	
6.....			1	1	1			3	1	1						52	
7.....			3		1		4	1					3			43	
8.....																	
9.....																9	
10.....					3												
11.....							1	1								3	
12.....				1	1		2							1		8	
2. Sanitation—																	
1.....	3	3	18	7	9	3	1	6		10	1	1	2			75	
2.....			6	1	2					1	2		3			28	
3.....				1													
4.....																	
5.....					3								2			14	
6.....					1												
7.....																9	
8.....			3	3	1											14	
9.....																	
10.....		1								3			1				
3. Power—																	
1.....					4				2							15	
2.....							1									9	
3.....					1											20	
4.....	1		15	3	4	1			6							26	
5.....		1	1	1	1		5	1	6	2		1			1	26	
6.....																4	
7.....		1	2							1						4	
8.....		2	7		2	1			4					1		4	
9.....	7	10	42	10	29	9		5	3	13	5	7	21		1	83	
10.....																9	
12.....																3	
4. Dangerous Mach.—																	
1.....													3			2	
2.....				3												51	
3.....		2	7	2	3	1		5		1		1	1			9	
4.....	1	1	5	1	6		1	6				2			1	41	
5.....																	
6.....		1			1		1									4	
7.....		1	2	1	4		1	5				1				7	
8.....																	
9.....																	
10.....			3							3						9	
11.....																	
12.....																	
5. Dangerous Mach. Parts—																	
1.....	6	3	17	16	26	4		4	2	62	2	1	11		1	124	
2.....								1	1				1			18	
3.....			3	1	2		1	1		2		1			1	9	
4.....			1														
5.....	5	7	50	11	37	11	20	7	1	44	4	7	14		3	222	
6.....	20	10	129	47	116	14	20	63	11	76	9	3	53	1	7	531	
7.....	1		3	1	6	1			2							33	
8.....		2	26	3	14	3	4	4	2	9	4	2	11		3	40	
9.....	3	16	11	6	18	5	21	21	5	8	4	4	12		7	60	
10.....	3		11	2	11	2		3		4	4		2			81	
11.....				1												8	
12.....																2	
Total.....	53	66	392	126	320	55	94	146	45	265	37	29	148	3	27	1,822	1

TABLE NO. 4—Continued.

Classification of orders.	Ringwood.	Robinson.	Rochelle.	Rock Falls.	Rockford.	Rock Island.	Romeo.	Rossville.	Round Lake.	Salem.	Sandoval.	Sandwich.	Savanna.	Shawneetown.	Shelbyville.	Silvis.	Solon Mills.
<i>1. Building—</i>																	
1.....					4	1											
2.....				3	1												
3.....	1	4	2	18	1	1						4	4		3	3	
4.....				1	3							3			1		
5.....				1	3							2					
6.....				1	2							2			1		
7.....				1	1												
8.....					1												
9.....					1												
10.....					6	1											
11.....				1			2										
12.....																	
<i>2. Sanitation—</i>																	
1.....		4	2	3	6	1		1			1		1		16		
2.....				3	2												
3.....																	
4.....				1	1	1											
5.....					2	1									1	1	
6.....																	
7.....																	
8.....																	
9.....	1	1			1				1				2		1		
10.....		3			1					2					1	4	
<i>3. Power—</i>																	
1.....					15		1										
2.....																	
3.....					8	1											
4.....		3		1	1		1					1			4	1	1
5.....		1	1	3	2								2		1	6	
6.....					1											1	
7.....					1											2	
8.....		1	1	1	4	1							3				
9.....	2	25	7	8	36	3	1	4	1	6	2	8	14	1	9	6	1
10.....																	
11.....																	
12.....													1			4	
<i>4. Dangerous Mach.—</i>																	
1.....		2		1													
2.....			1	1		1						1					
3.....		5		1	4	1				1				1	3		
4.....		5			29	3		1		1		5			1	3	
5.....																	
6.....		2			3								1			2	
7.....		4			5					1			1				
8.....																	
9.....			1													1	
10.....					3	9											
11.....																	
12.....																	
<i>5. Dangerous Machinery</i>																	
<i>Parts—</i>																	
1.....		18	12	52	81	20	3		1			5	5		15	11	
2.....					13												
3.....		1	1	3	9	1						1				1	
4.....					2												
5.....	1	20	6	37	65	55	2	3	2	4	2	10	6		12	30	
6.....	8	61	19	37	415	168	8	5	5	11	5	27	25		30	100	2
7.....	1	1	4	1	10	3								1	1	3	
8.....		5	2	16	36	3		3		1	1	7	2		3	2	
9.....		13	3	18	29	5		2	1	1	1	6	10		6	6	1
10.....		4			8	18		1			1	1		1	3	7	
11.....		1								1							
12.....																	
Total.....	14	184	62	194	832	296	19	21	11	29	13	83	78	3	112	194	5

TABLE NO. 4—Continued.

Classification of orders.	Spring Grove.	Spring Valley.	Sterling.	Stockton.	Streator.	St. Charles.	Sullivan.	Sycamore.	Tamm.	Taylorville.	Terra Cotta.	Tower Hill.	Tuscola.	Union.	Urbana.	Utica.	Venice.
1. Building—																	
1.....																	
2.....		1															
3.....			1		3		1										
4.....		1	12	1	21	18	6			4	1		1	1	5	7	3
5.....			7		5										4		
6.....			7		1	4				1					2		
7.....				1	3						2				2		
8.....																	
9.....																	
10.....																	
11.....			1														
12.....				1		1	3										
2. Sanitation—																	
1.....			2	2	26		3	1		1			4		4	2	3
2.....			1	3	3										2		
3.....					1												
4.....					3										1		
5.....																	
6.....																	
7.....					6		1	1		1					1		
8.....					1		1		1	1					1		
9.....					1		1		1	1					1		
10.....																	
3. Power—																	
1.....					1	2											
2.....				1	3												
3.....																	
4.....		1		2				1					2		1	1	
5.....				5	8	1	7							1	6		3
6.....					1	5											
7.....					5												
8.....				3	2	11	2								9	1	
9.....	2	5	30	9	58	4	9	11	1	7	1		11	4	16	3	1
10.....					1												
11.....																	
12.....																	
4. Dangerous Mach.—																	
1.....															1		
2.....																1	
3.....				6	4	3	2								1		
4.....				4	2	8	3	2		1					1		
5.....								2									
6.....					1												
7.....			2	3	2		1	1		1							
8.....																	
9.....																	
10.....																	
11.....																	
12.....																	
5. Dangerous Machinery Parts—																	
1.....	2	1	23	3	28	2	16	7	1	7	1	1	6	4	8	4	1
2.....						1											
3.....			4		7			2							1		
4.....										1							
5.....	2	2	52	1	47	9	28	39		5	2	1	13	1	19	5	4
6.....	14	3	86	2	133	19	66	24	2	18	7		27	13	48	5	10
7.....			17		3	3	7	1					2	3			
8.....			12	1	28	1	6	6		2	2		3		7		
9.....	1	1	32	4	41	4	9	14		2	1		6	1	12	1	2
10.....				1	7	1	7	6		1		1	4				
11.....																	
12.....																	
Total.....	22	17	314	36	472	71	178	118	5	52	18	3	79	28	152	30	29

TABLE NO. 4—Concluded.

Classification of orders.	Vienna	Virden.	Warren.	Watseka.	Waukegan.	Wheaton.	Woodland	Wood River.	Woodstock.	Yorkville.	Zion City.
<i>1. Building—</i>											
1.....					1						
2.....											
3.....				1							3
4.....	1	4	1	6	18			3	1	2	1
5.....		1		1	5						1
6.....					2			1	1		
7.....				2	4			1			
8.....											
9.....											
10.....									1		
11.....					1						
12.....	1			1	1				2		
<i>2. Sanitation—</i>											
1.....				2	16		1	2	3		1
2.....			1		2		1		1		
4.....									1		1
6.....											
7.....					2						
8.....											
9.....					11				1		
10.....											
<i>3. Power—</i>											
1.....					2						
2.....											
3.....					4						
4.....		1			9			1			
5.....			1		6	2					
6.....					1						
7.....											
8.....			2	1				1	3		
9.....	1	1	3	7	5	1	1	1	6	1	1
10.....											
12.....											
<i>4. Dangerous Machinery—</i>											
1.....									1		
2.....					10						
3.....		2			2				1		
4.....		1			2	1			1		
5.....		1									
6.....											
7.....								1			
9.....					1						
10.....											
11.....											
12.....											
<i>5. Dangerous Mach. Parts—</i>											
1.....		2	11	1	16		1	3	14		5
2.....					1						
3.....					2				1		
4.....											
5.....	1	7	1	2	26	5	2	8	21	2	33
6.....	4	9	6	7	81	16	4	9	52		16
7.....	1				8			1	1		
8.....			1	1	8	4	1		2		
9.....			1	2	9	3			7	1	4
10.....		4	1		1	1	1	1	3		
11.....											
12.....											
Total.....	9	32	29	34	257	33	12	33	124	6	65

The arrangement of the previous tables shows that the provisions of the "Health, Safety and Comfort Law" pertain to safe conditions in and about buildings, to sanitary conditions in the buildings, to power transmission, to the guarding of dangerous machinery, and to the elimination of all hazard points caused by dangerous parts of machinery.

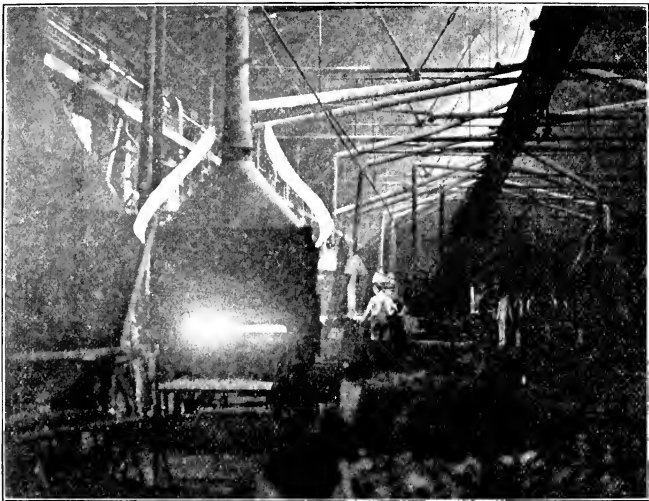


Illustration No. 1. Exhaust hood over oil furnace in forge shop. Exhaust reduces excessive heat from which workingmen previously suffered, without impairing heating power at point of work.

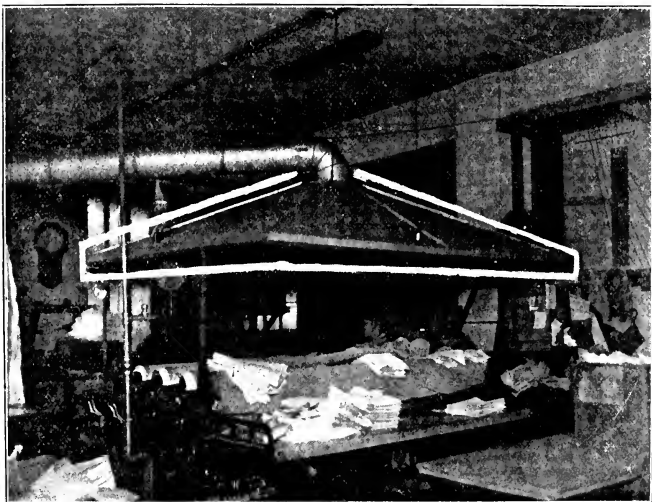


Illustration No. 2. Exhaust hood over laundry mangle

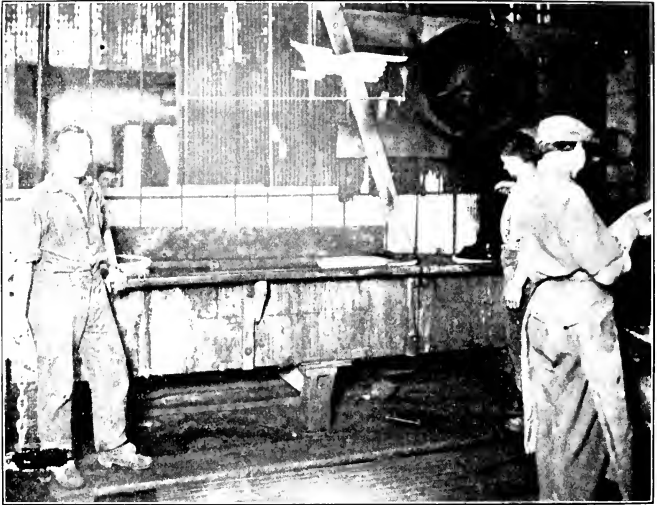


Illustration No. 3. Acid dip tank showing fan to draw off harmful and injurious fumes.

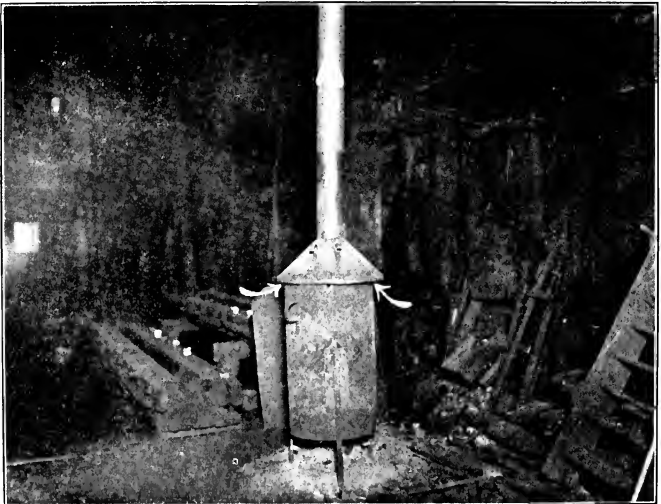


Illustration No. 4. Salamander in foundry hooded to draw off dangerous gases. The arrows indicate opening, which causes draft in pipe "A" to carry off gases.

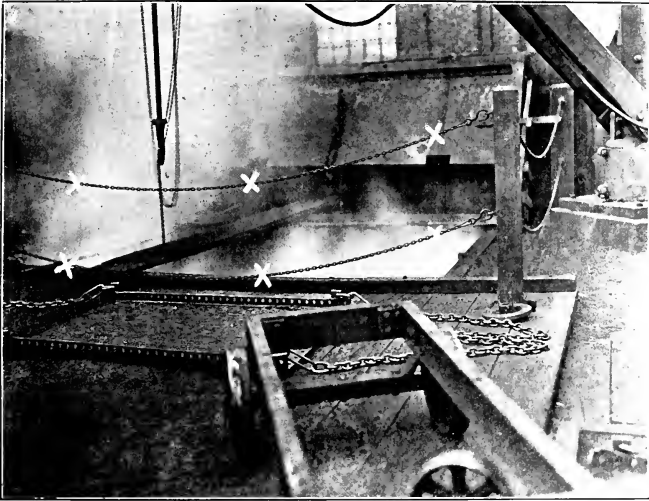


Illustration No. 5. Caustic soda vat with insufficient chain guard. In this case nothing would prevent a workingman from falling into the vat and being boiled alive. A substantial fence or rail of proper height would insure safety.

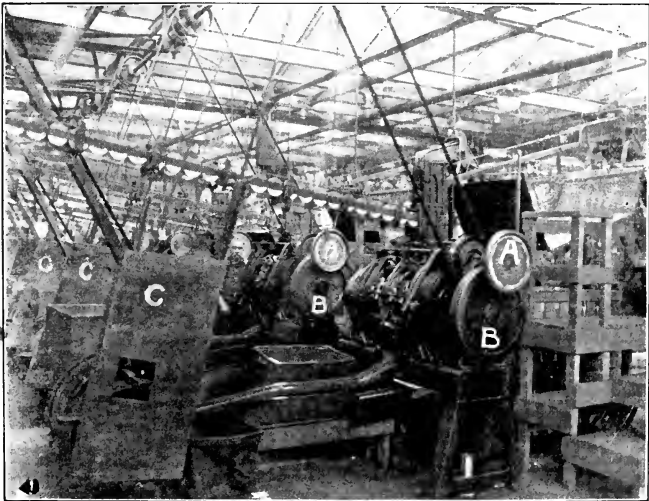


Illustration No. 6. Can ending machine showing handwheel ("A") and flywheel ("B") equipped with disc guard. Belts ("C") inclosed with metal sheeting.

BUILDINGS.

Exits.—Under the caption of “building,” such items as exits and fire escapes, doors, passageways, treads, handrails, toeboards, openings in floors, elevators, lighting and heating must be considered.

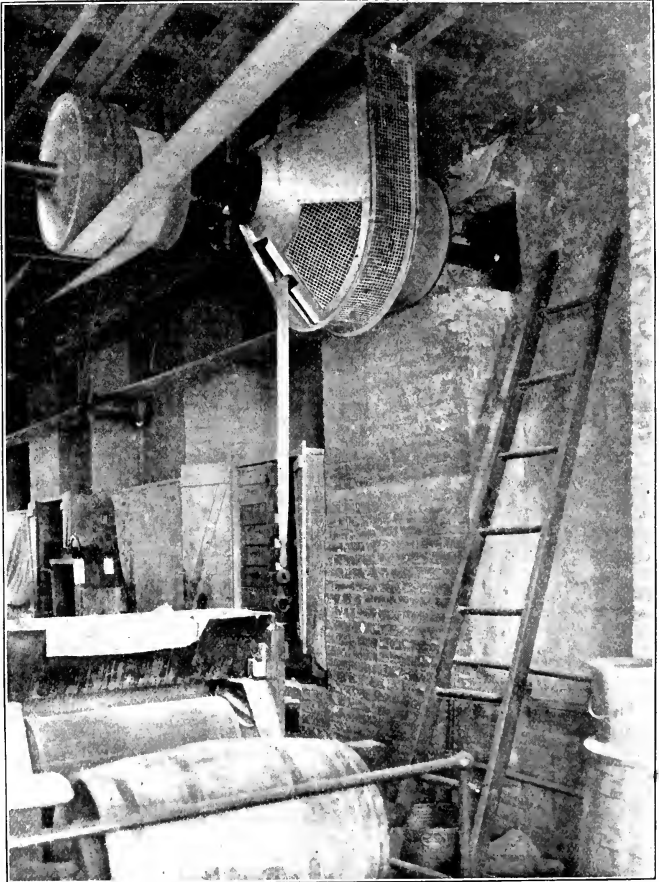


Illustration No. 7. Clutch on main line shafting with toggles enclosed to ceiling.

Fire escapes.—All exits should be properly marked and doors should swing outward. Fire escapes on factories two or more stories in height must be installed. The fire escapes should consist of substantial treads,

similar to stairs, with handrails and stationary platforms at each floor. The stairs near the ground should consist of swinging steps with counter-balance.

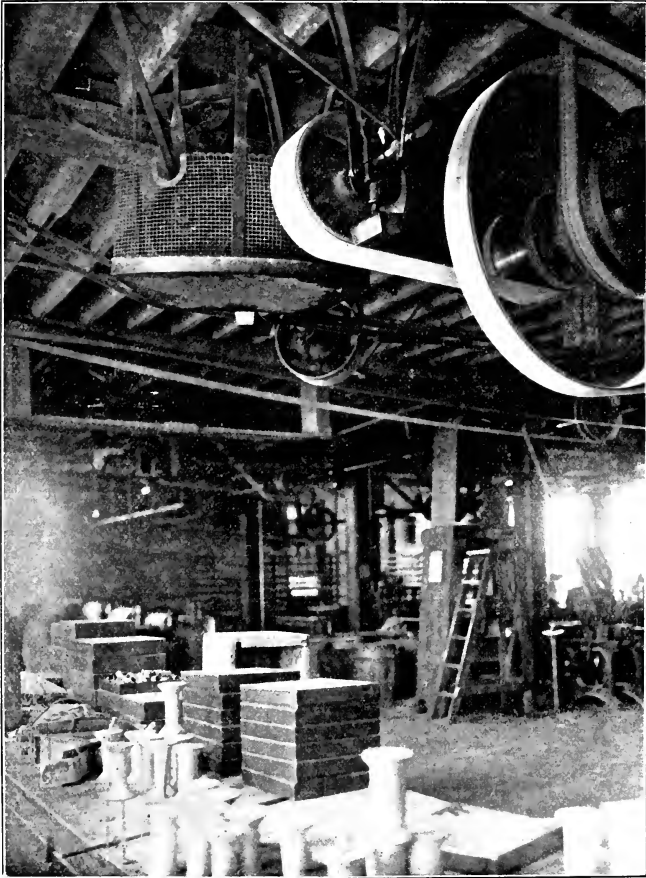
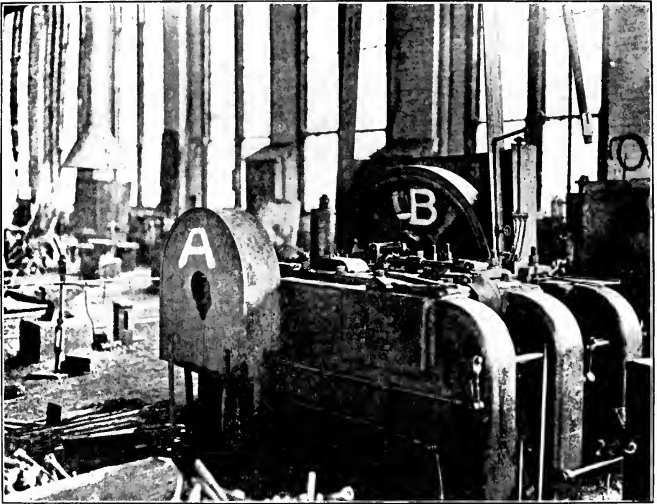


Illustration No. 8. Bevel gears on line shaft inclosed by wire mesh guard

Slide or roll doors.—Exit doors should be constructed in such a manner that they will swing outward, slide or roll.

Stair treads.—Stair treads must be kept in proper repair, so that a safe footing may be had at all times.



[Illustration No. 9. Bolt header with drive ('B') and gears ('A') inclosed.

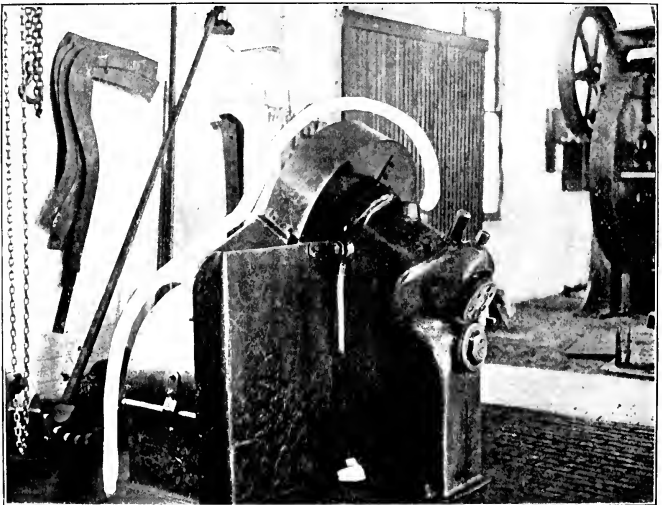


Illustration No. 10. Circular shear with gears guarded.

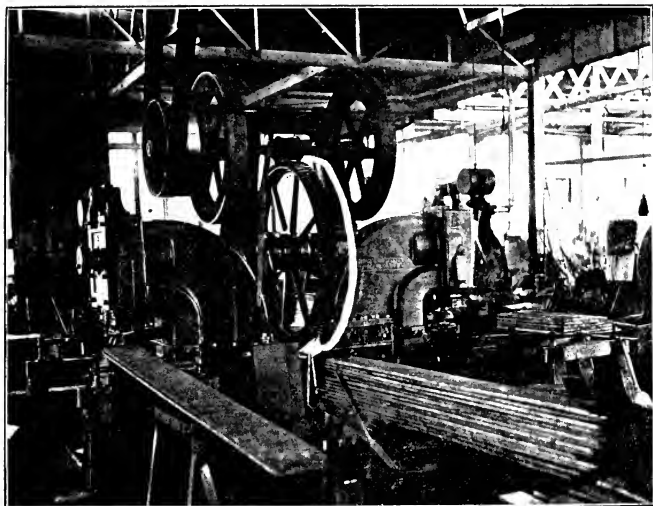


Illustration No. 11. Exposed dangerous gears on combination punch and shear.

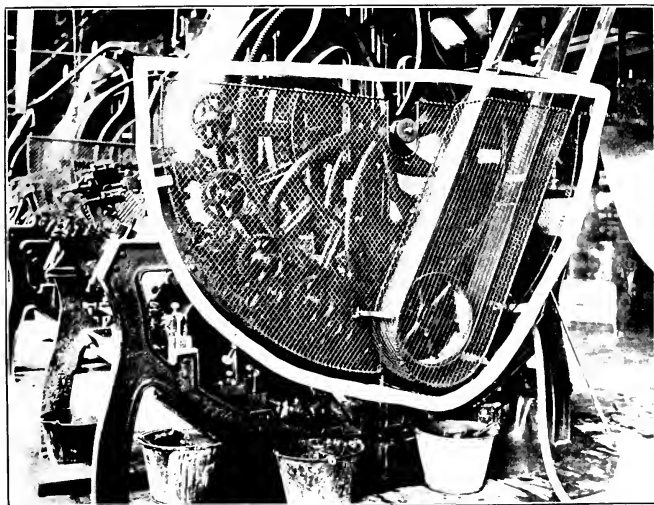


Illustration No. 12. Wall paper printing press with inclosed cylinder gears and drive belt and pulley.

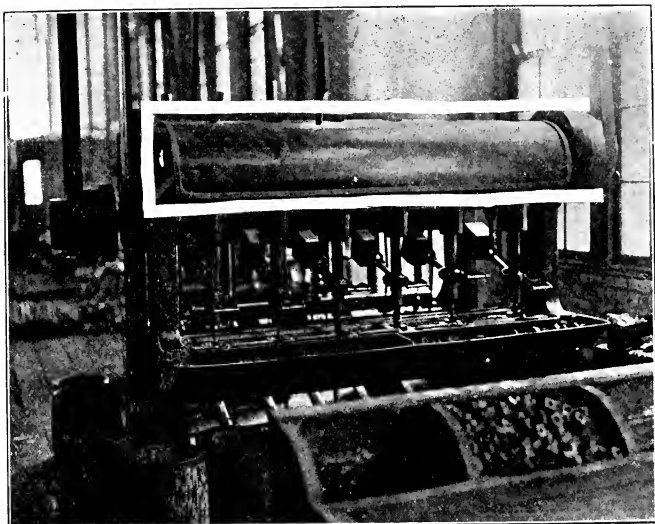


Illustration No. 13. Multiple tapping machine with gears guarded.

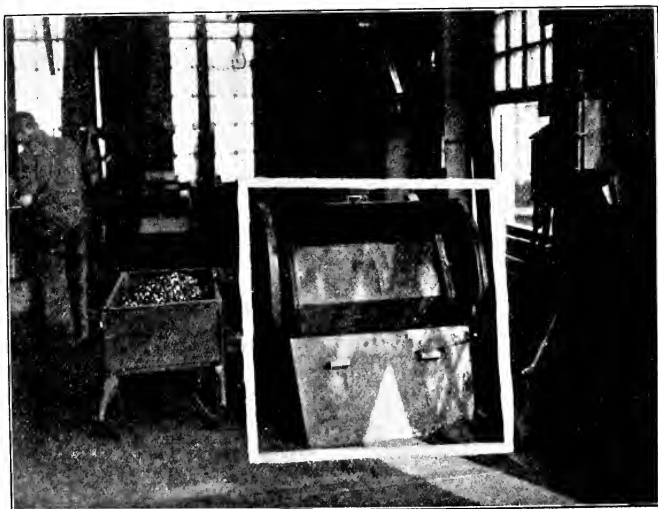


Illustration No. 14. Tumbling barrel with sheet metal inclosure. Sliding cover pushes back.

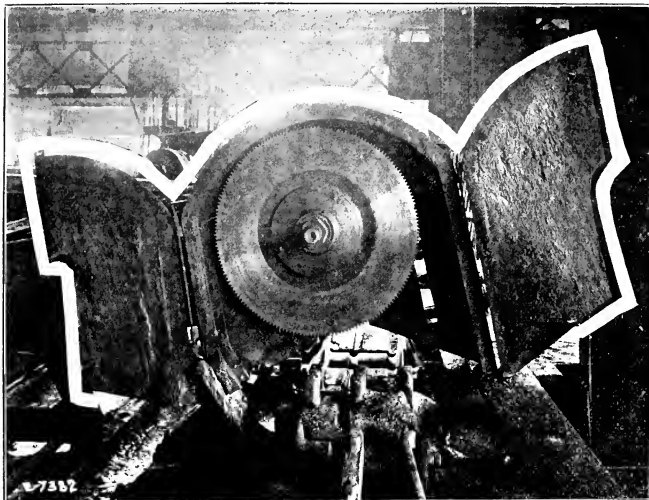


Illustration No. 15. Cold saw with steel guard. Guard open. These saws are very dangerous on account of breaks, caused by jamming.

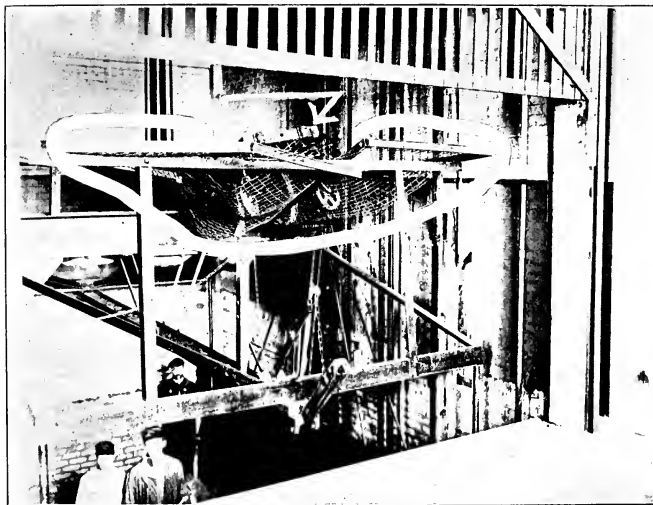


Illustration No. 16. Elevator accident. Truck fell three stories through open door. Wire mesh canopy, which had been installed upon order of this department, saved the men on the elevator from injuries and possible death. Design of wire mesh elevator tops are given in 21st annual report on pp. 115 and 116.

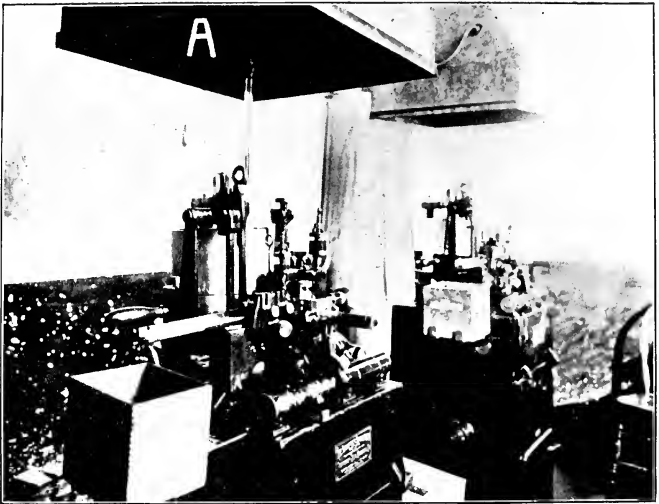


Illustration No. 17. Exhaust hood over monotype machine for the purpose of carrying off lead and gas fumes.

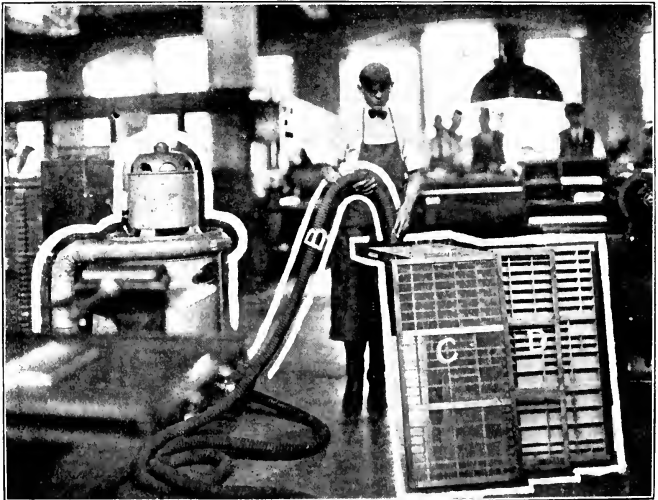


Illustration No. 18. Vacuum system for cleaning type cabinets in composing room of print shop. "A" is vacuum machine, "B" hose, "C" screened cover for type drawer "D." The screen is placed over drawer, inverted so that type falls in their respective compartments. The drawer is cleaned by means of the vacuum. All dust and dirt on type falls through screen.

Handrails and toeboards.—Handrails must be provided for all stairways, and in cases where the stairways are more than 5 feet in width, handrails must be placed on both sides of the stairway.

Openings in floors.—All balconies and openings in floors should be guarded with a toeboard to prevent material from rolling down or from being accidentally pushed off. This means will prevent a person on the floor below from being injured by falling tools or materials. Often falling tools or materials fall into swiftly moving machinery and cause serious accidents. Platforms and walkways with handrails should be built over all dangerous passageways.

Openings in floors should be guarded by rails or otherwise properly inclosed to prevent employees and others from falling into such openings. Inclosures around floor openings eliminate accidents to employees on the

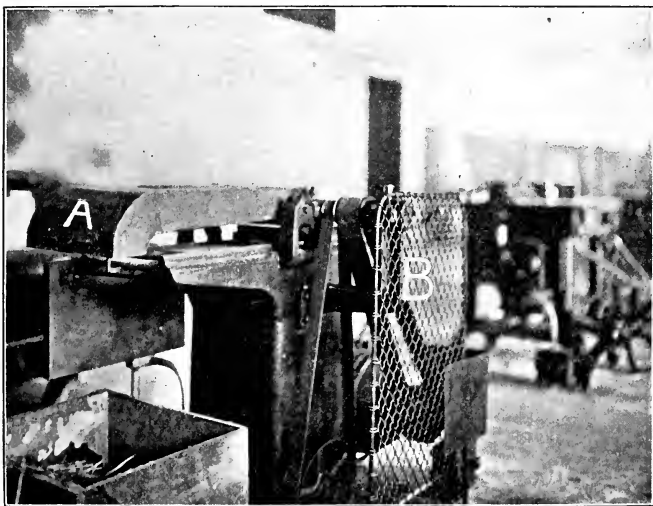


Illustration No. 19. Type-high machine with cutter head, belt and pulley drive inclosed.

floor below by reason of falling material. Rails or guards are particularly desirable around clay grinders, grain elevators, and vats which contain acids or boiling water, as in foundries, breweries, etc.

Elevator gates.—Elevators must be provided with automatic or semiautomatic gates for the purpose of preventing employees or others from falling down the elevator shaft, when the elevator cab is not at the floor. To prevent feet from being crushed between car and floor landing floor projections should be provided with steel slant toe guards. In mercantile establishments and other buildings, where elevators are used exclusively by employees and other persons, elevators should be equipped with interlocking door devices. All elevator cabs should be properly inclosed on all sides to a height of 5 feet, except the side used as entrance to car. See Illustration No. 16.

Safety devices on elevators.—Automatic safety catch devices should be installed on all elevators for the purpose of holding cars when the cables break. All cars using rope shift should have lock on rope, so that

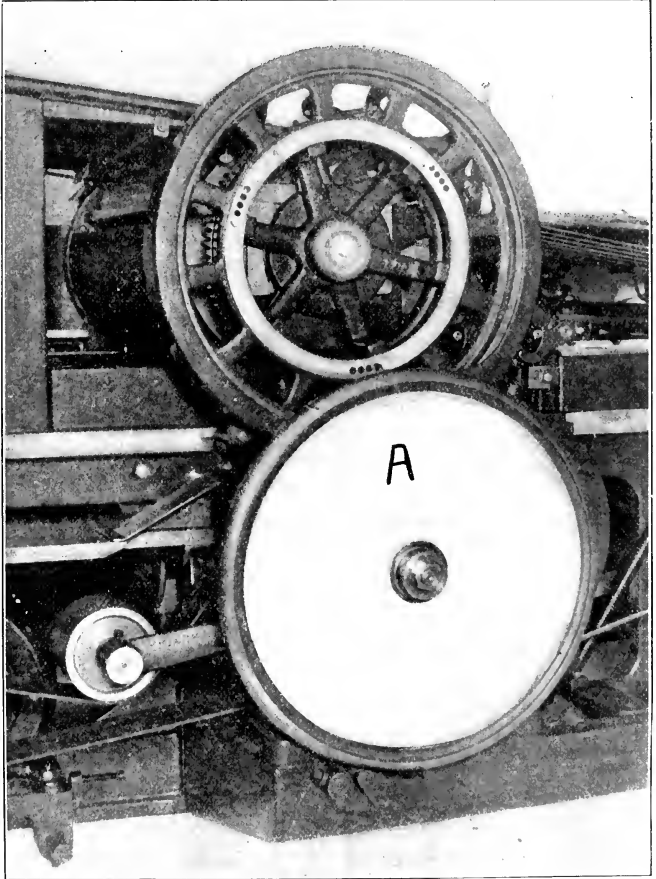


Illustration No. 20. "A" represents disc guard on a Miehle press flywheel. See also illustration No. 21

car remains permanently at landing being used. Where locks of this description are used, it is impossible for a person on a higher floor to pull the elevator up without the knowledge of the person on the lower floor. See Illustration No. 38.

Proper lights.—All hallways, passageways, stairs and entrances must be provided with adequate lights and, when necessary, must be lighted during work hours.

Passageways and obstructions.—All passageways, halls, stairs and fire escapes must be free from obstructions at all times. Boxes, cans, old paper, etc., constitute obstructions and should never be permitted to accumulate, especially near or on fire escapes.

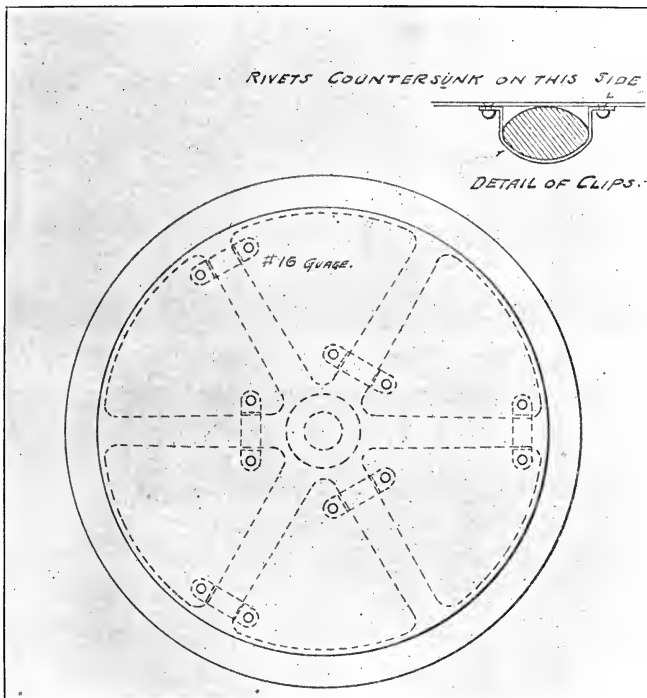


Illustration No. 21. Reproduction of blue print drawing made by this department. Drawing shows method of attaching disc to flywheel.

Heating.—All factories, workshops and mercantile establishments must be sufficiently heated to make the workrooms comfortable for employees. Salamanders, used to heat foundries, should be provided with hoods in order to carry off all gases. See Illustrations Nos. 2 and 4.

Dangerous places.—Overhead passageways, all openings, vats, pits, etc., must be properly railed in or inclosed. See Illustrations Nos. 5 and 36.

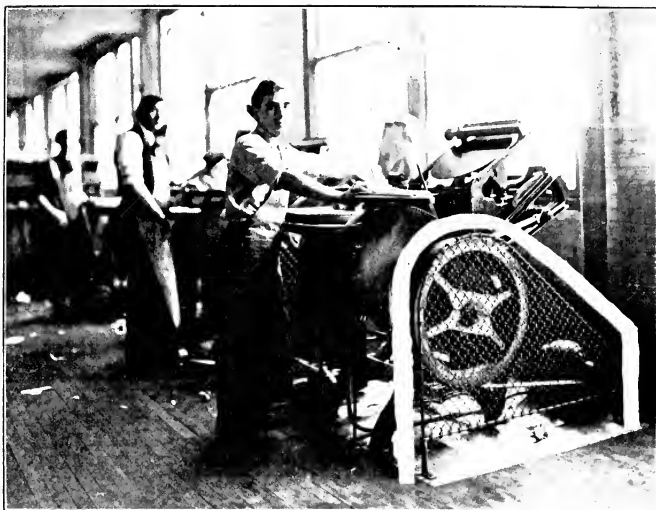


Illustration No. 22. Gordon press with drive pulley and belt guarded.

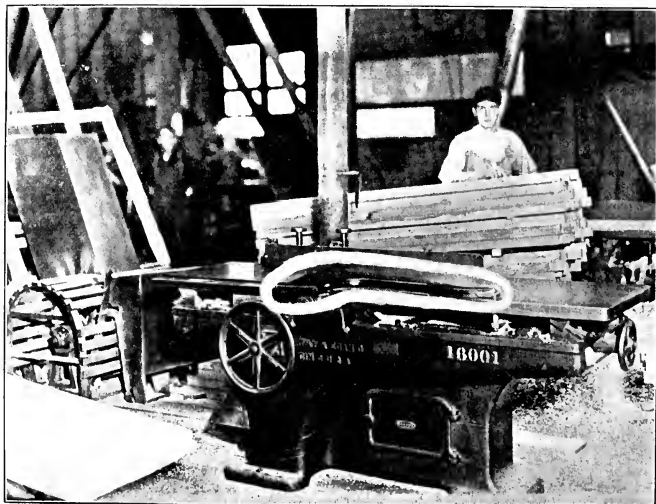


Illustration No. 23. Wood jointer with guard over cutter head. Belt pulley and countershaft inclosed.

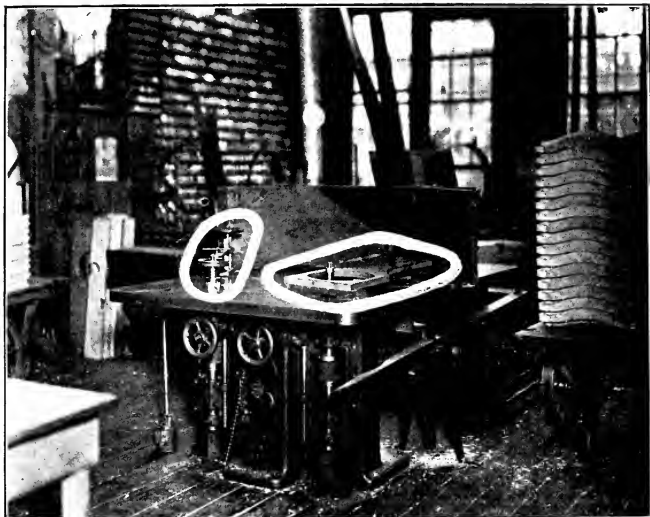


Illustration No. 24. Woodshaper with guard over knives.

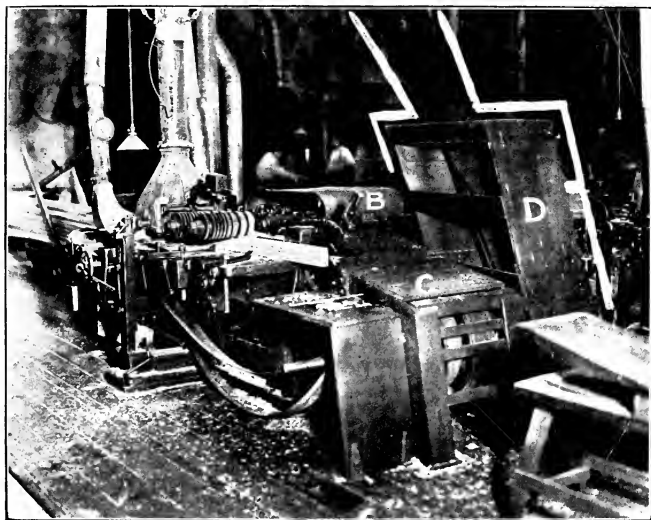


Illustration No. 25. Wood sticker machine with exhaust system. Drive belt and pulley are guarded.

SANITATION.

Toilets.—Toilets must be provided in factories, mercantile establishments, mills and workshops. Toilet rooms must be properly inclosed with partitions and the doors must be plainly marked by which sex to be

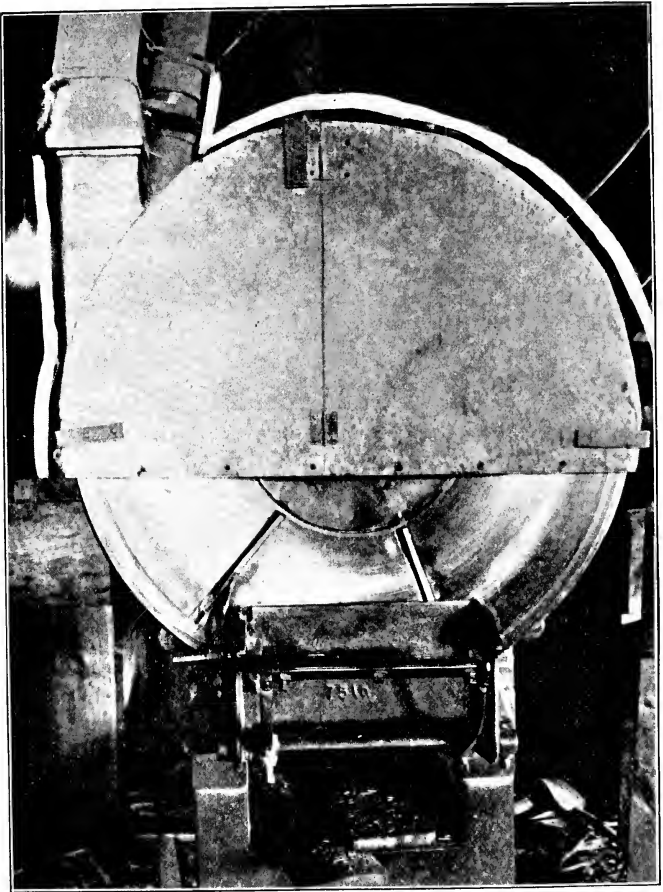


Illustration No. 26. Stave jointer with guard over cutters and equipped with exhaust system.

used. All such rooms must be ventilated to the outside air. One water closet for every thirty male employees, and one for every twenty-five female employees must be provided. Toilets for male and female employees should be installed separate and apart from each other and

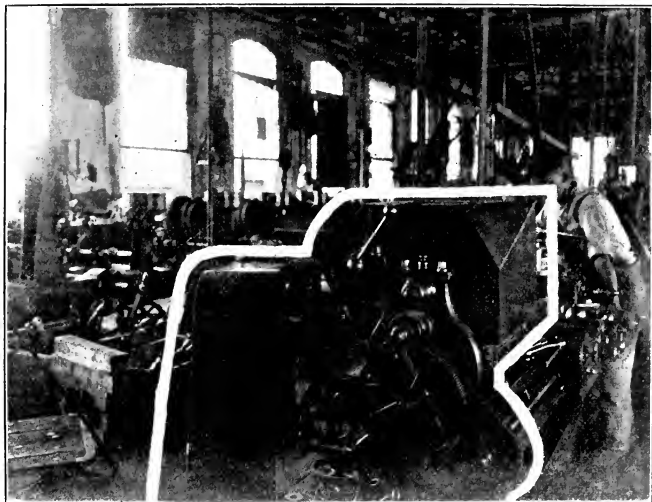


Illustration No. 27. Lathe with change gears and cone pulley guarded. Gear guard open.

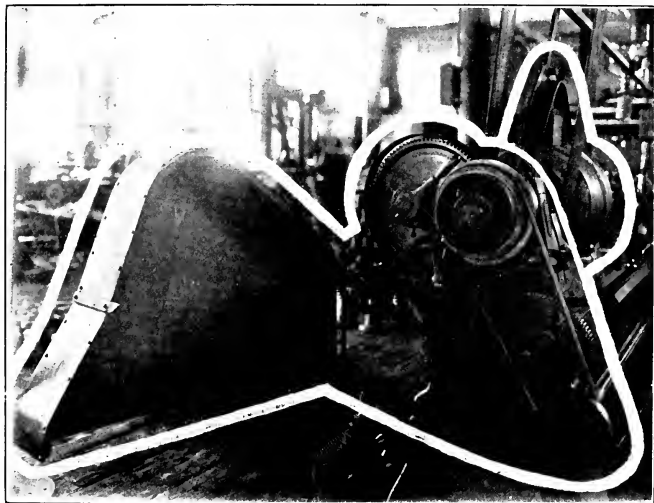


Illustration No. 28. Engine lathe with change gear guard open. Note cone pulley brake.



Illustration No. 29. Destruction caused by the explosion of a flywheel.

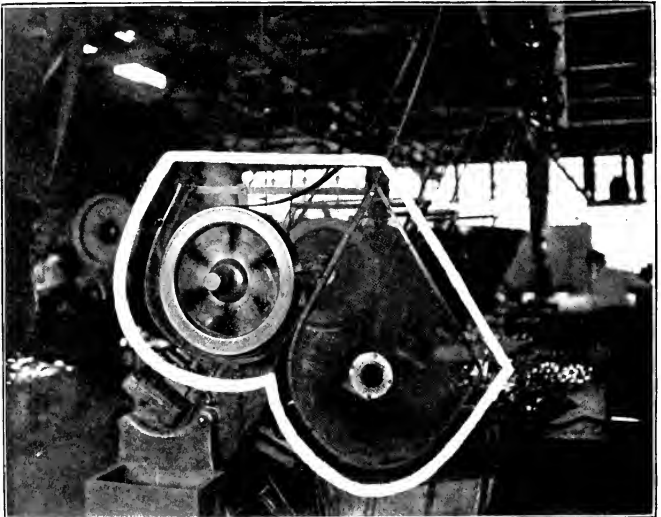


Illustration No. 30. Stamping press flywheel with wire mesh guard. Guard open.

contain adequate lighting. Water closets must be kept in a sanitary condition and well disinfected.

Washing and dressing rooms.—Adequate washing facilities and proper dressing rooms must be provided for use of employees in all factories, mercantile establishments, and workshops. In factories, mills or workshops one basin must be provided for each thirty employees, while in mercantile establishments one basin must be installed for each fifty employees. Dressing and washing rooms may be together, but must be separate for each sex. In such places of employment where paints and poisonous substances are used in the process of manufacture, proper

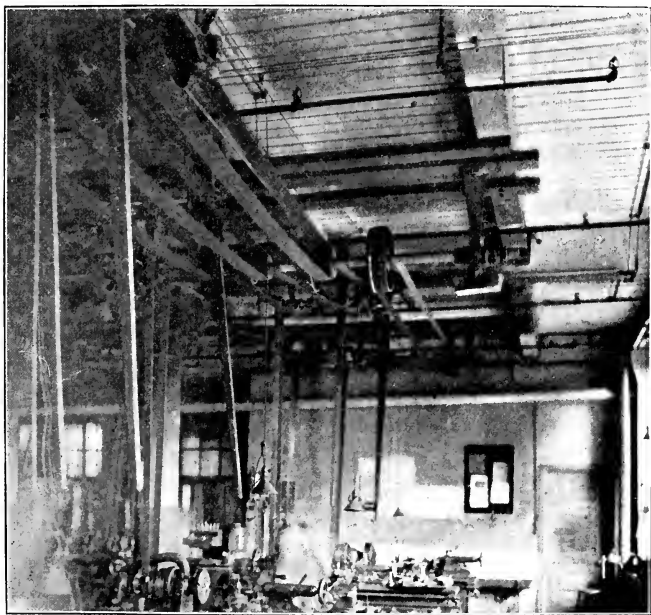


Illustration No. 31. Belt shifters of sufficient length to be within easy reach of operators.

dining rooms must be placed at the disposal of employees apart from workrooms. See Illustrations Nos. 39, 40, 41 and 42.

Seats for females.—A reasonable number of suitable seats for female employees must be provided and the use of same permitted at all times, when this would not interfere with the proper discharge of the duties of such employees.

Proper ventilation.—Every employee is entitled to at least 500 cubic feet of air space, except where lights are used which do not consume oxygen, in which case 250 cubic feet of air space will be sufficient.



Illustration No. 32. Exposed revolving shafting. Danger of being drawn on the shaft when men stand near the shafting, while piling up the boxes.

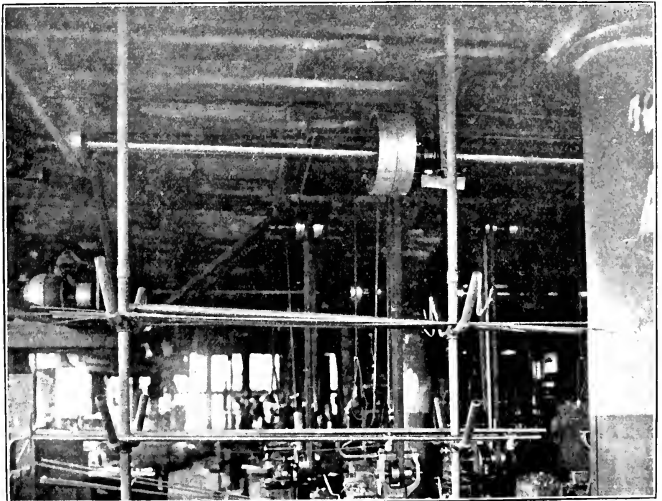


Illustration No. 33. Exposed revolving shafting, dangerous when men stand on ladder to place pipes on racks.

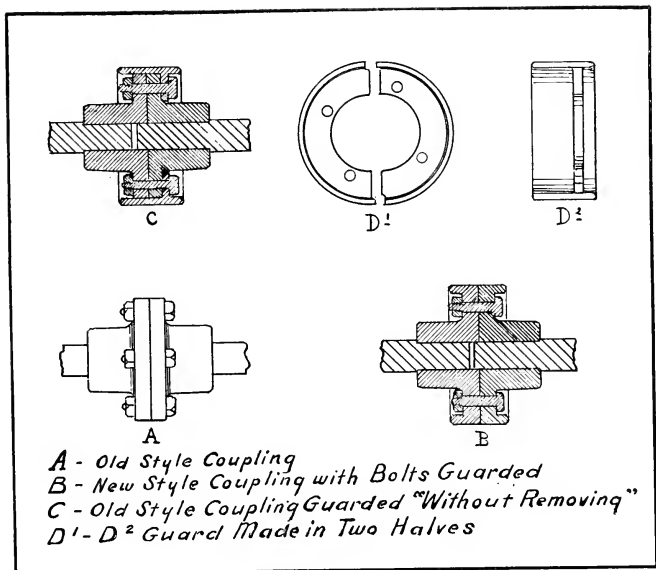


Illustration No. 34.

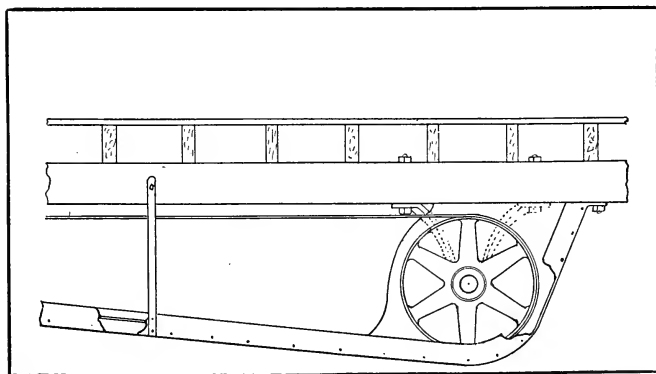


Illustration No. 35. Guard for heavy overhead belt. This drawing shows a heavy overhead belt guarded with a metal trough extending to the ceiling. In case of belt breaking or coming apart the ends cannot be thrown over the guard. With this method pulleys are guarded from hanger bearing.

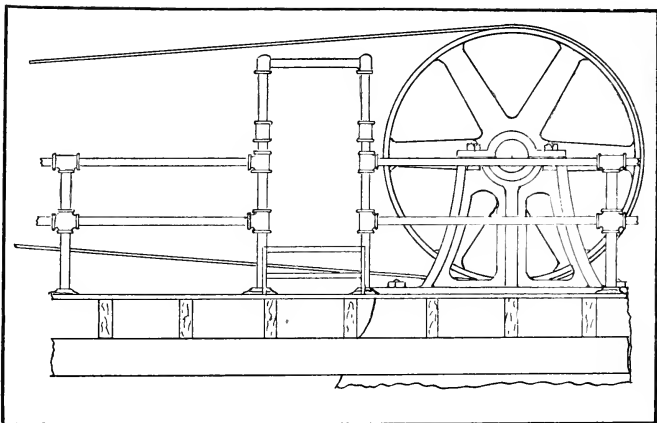


Illustration No. 36. Method of guarding low belt. Drawing of low belt which has been guarded by railing and provided with safe passageway across belt by means of a covered bridge.

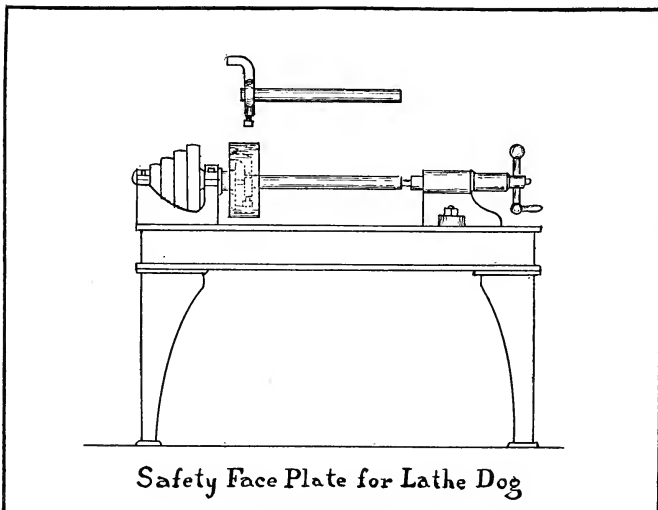


Illustration No. 37.

No artificial means of ventilation are necessary for rooms having at least 2,000 cubic feet of air space for each employee and having outside windows and doors, whose area is at least one-eighth of the total floor area. However, in these cases which require no artificial means of ventilation, the rooms must be properly aired at the beginning of each work day and during meal hours.

Safety Lock for Rope Operating Elevator

A¹ and B¹ Showing Rope Locked

A² and B² Showing Rope Unlocked

A³ and B³ Sectional View Unlocked

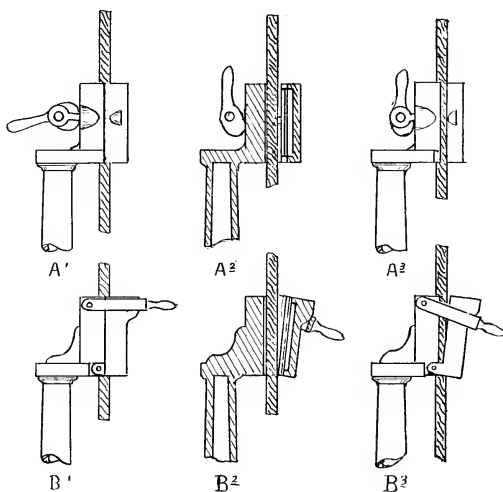


Illustration No. 38.

Artificial means of ventilation supplying at least 1,500 cubic feet of fresh air for each employee during each working hour are required, when the rooms have more than 500 cubic feet, but less than 2,000 cubic feet of air space for each person and the outside windows and doors equal one-eighth of the floor area. In this instance the ventilation system must be in operation, when the outside temperature requires that the windows be kept closed.

Artificial means of ventilation supplying 1,800 cubic feet of fresh air for each employee during each working hour are necessary in the two following instances:

1. Where the room has less than 500 cubic feet of air space for each employee:

2. Where rooms in which the outside window and door area is less than one-eighth of the floor area.

When artificial means of ventilation are required, the air supply must be taken from the outside of the building not less than 20 feet from the ground. Taking the air from cellars or basements is absolutely prohibited.

Dust and fumes.—All dust producing machines, vats, forges, etc., must be equipped with hoods piped to the outside air containing an exhaust system to carry off the fumes and dust. See Illustrations Nos. 1, 2, 3, 14, 17, 18, 43 and 44.

Clean and dry rooms.—Every workroom must be kept in a clean, dry and sanitary condition for the comfort of employees.

Fans and blowers.—Fans and blowers to remove fumes, dusts and gases must be installed when it is necessary to keep the air pure and fresh. See Illustrations Nos. 1, 2, 3, 43 and 44.

Furnaces, vats, pans, etc.—Adequate rails or covers must be provided over ovens, furnaces, vats, forges, pans, etc. See Illustrations Nos. 1, 2, 3 and 5.

POWER.

Disengaging device.—Every factory with one or more departments must install an engine stop or some effective disengaging device operated from each department for the purpose of stopping all moving machinery in case of accident.

Signal device.—Signal systems must be installed on elevators or in engine rooms to give proper warning, when emergency requires, to the engineer to shut down engines.

Belt shifter.—All power driven machinery must have belt shifters, where tight and loose pulleys are used, and such belt shifters must be placed within easy reach of the operators. See Illustration No. 31.

Engine room and boiler room.—This caption includes all items pertaining to safety in the boiler or engine rooms, such as flywheels, valves, etc. See Illustration No. 29.

Clutches and couplings.—All clutches with exposed toggles and all couplings with exposed bolts, and all weights must be inclosed. See Illustrations Nos. 7, 8 and 34.

Switches.—Switches installed on separate motors and throttles on engines must be within easy reach of operators.

Motors and dynamos.—Rubber or wooden matting must be installed around motors, dynamos and switchboards to prevent shocks.

Electrical appliances.—All electrical wires must be inclosed and properly taped.

General orders.—General orders pertain to cleanliness, instructions of inspectors and posting of notices.

Eccentrics and crank shafts.—All eccentrics and crank shafts are dangerous and must be effectively guarded.

DANGEROUS MACHINERY.

Hydro extractors.—To guard against the loss of fingers and other accidents, hydro extractors must be provided with covers.

Mangles and rolls.—Mangle rolls must be provided with finger guards; metal rolls must have finger guards; drums, crushers and tumblers must be inclosed.

Band saws.—Circular saws must have a practicable as well as effective guard over the saw.

Planers.—Knives on planers must be properly inclosed.

Shapers and jointers.—All shapers, jointers and stickers should be provided with effective and proper guards. See Illustrations Nos. 23, 24, 25 and 26.

Trip hammers.—All trip hammers should be provided with treadle locks. Bulldozers and shears must be properly guarded.

Printing presses.—Miehle presses must be provided with toe guards. All flywheels, belts and pulleys and all shafting must be effectively inclosed or guarded. See Illustrations Nos. 19, 20, 21 and 22.

Looms, spindles and shuttles.—All looms, spindles and shuttles must be properly guarded.

DANGEROUS MACHINERY PARTS.

Flywheels.—All flywheels are dangerous and must be either inclosed or rendered harmless by attaching a disc over the spokes to insure a smooth surface. See Illustrations Nos. 6, 20, 21, 29 and 30.

Punch presses.—The zone of hazard on a punch press is at the point of work. To prevent the loss of fingers and hands punch presses must be provided with a practicable and effective guard at point of work.

Planers and shapers.—A metal guard should be installed over openings in bed of planer and shaper under the platen.

Turret lathe.—Pipe machines and turret lathes should be provided with a guard for feed stock. See Illustrations Nos. 27, 28 and 37.

Gears, belts, etc.—All gears, belts, pulleys, sprocket wheels and chains must be properly inclosed. See Illustrations Nos. 6, 8, 9, 10, 11, 12, 13, 19, 22, 23, 25, 27, 28, 36 and 37.

Shafting.—All low shafting is extremely hazardous and must be inclosed, and shafting which projects more than one inch beyond bearing must be either cut off or properly inclosed. See Illustrations Nos. 31, 32 and 33.

Set screws, bolts, etc.—Exposed set screws, bolts and key heads must be cut off, inclosed or otherwise properly guarded. See Illustrations Nos. 34 and 37.

Emery wheels.—Heavy metal guards must be installed over emery wheels and ends of spindles must not project beyond the nuts. See Illustration No. 46.

Cranes.—All truck wheels on cranes should be provided with a finger or warning guard, placed at least 18 inches in front of wheels. The use of steel brushes should be avoided, since numerous cases have come to the attention of this department, where the steel bristles of the brushes have penetrated an employee's hand, causing blood poisoning.

Cutters, splitters, etc.—All cutting tools should be provided with proper guards.

EXPERIENCE BEST TEACHER.

Upon the passage of the "Health, Safety and Comfort Law" the work outlined in the law for this department brought beneficial results from the start. Each year the inspectors of this department visit thousands of establishments for the purpose of safeguarding dangerous machinery. Our inspectors continually investigate accidents as soon as reported, in order to correct defects and prevent reoccurrence of accidents. In this manner the combined experience gained in thousands of shops is given gratis to other establishments, who will receive the benefit of lesson learned from the other fellow's misfortunes.

No one can deny the truth of the proverb: "Experience is the best teacher," and her lessons are always sound and useful. However, too many belong to that group, which must feel the experience themselves, before they learn.

We should try to overcome the tendency which prompts us to experience this, that and the other thing ourselves, and should seek to learn and profit by the experiences of others. If a manufacturer in South Chicago has an accident in his plant due to failure of guarding dangerous machinery, he has been taught a lesson. But why should his neighbor wait and fail to guard his own dangerous machinery? He should learn his lesson from his neighbor's experience. The fact that a safety law was placed on the statute books shows that some men must have gained the knowledge that exposed gears, unprotected belts, unguarded floor openings, and other features are dangerous to life and limb.

SPACING OF DANGEROUS MACHINERY.

Section 1 of the "Health, Safety and Comfort Law" provides that all dangerous machinery shall be so located as not to be dangerous to employees.

By crowding machines together and limiting the aisle space, manufacturers handicap themselves, in spite of their belief that greater economy and production will be gained thereby. From a production standpoint there is no advantage in placing machinery so close that the workmen interfere with one another. If the workmen are paid by the day they are likely to stand idle while the operation of a nearby machine interferes with their work, and where the piece-work system prevails, each employee, knowing his wage will depend upon his production, is likely to continue his work in the face of difficulties and dangers. His movements are likely to interfere with his neighbors' work, just as their movements interfere with his; and where the crowding is excessive, the likelihood of accident is often very great. Trifling causes often result in serious accident; and a slight push may cause a workman to lose his balance so that in recovering himself he may thrust his hand, arm or foot into some moving part of the machinery and be badly injured.

In order to afford the proper protection to the workingmen, all machinery should be set a safe distance apart, and a safe distance from walls and posts and other fixed parts of the building should be maintained. Insufficient spacing is especially dangerous in connection with machines which turn out work of considerable length, or into which long pieces of raw material are fed. The operator of each machine must necessarily confine his attention closely to his own work, and so may be struck unexpectedly and injured by a bar or other object projecting from

a machine near by. Under some circumstances one end of a bar of this kind may be caught in an unprotected gear or other moving part of the next machine. In either case the chance for injury to the employees in the immediate neighborhood is great.

Limited machine space and limited aisle space usually go together; and in such cases there is rarely sufficient space, near the operators, for the safe storage of material or finished product. Often the operators take little care to arrange the pieces in orderly fashion, but simply let the material lie wherever it falls. Two dangerous conditions arise: excessive piling of material in the already crowded space, or a constant procession of workers bringing in raw material and removing finished products.

Castings or other unfinished material lying on the shop floor cause a passing person to stumble; a simple fall upon the floor may cause a bad injury; and the seriousness is often increased when a man who has tripped, falls in the direction of a moving machine. This may happen at any moment in a shop where the machines are closely spaced, where limited aisle-space is provided and piles of working material are allowed to remain on the floor. Any workman, in going from one machine to another under such conditions, must be extraordinarily careful to avoid colliding with other men or with materials they may be handling; and he must also be careful to avoid tripping over tools or material lying on the floor.

The men or boys who supply the machine operators with raw material, or remove the finished product, are in danger of injury to themselves or of causing injury to others in several ways. The truck will take up a large portion of the already limited space, and any person who wishes to use the passage is at a disadvantage. The man loading the truck is likely to have his hand or clothing caught in the neighboring machinery, or he may accidentally move a belt-shifting rod or other machine-starting device; any of these actions will result in an accident.

In pushing trucks about the shop it is often necessary for them to pass one another, and there is seldom any special place reserved for this purpose. The men in charge of the trucks usually take advantage of the first handy nook or recess and try to get by one another. In doing this their hands often become bruised, lacerated or crushed. If the men try to pass in the narrow aisle the trucks are likely to collide, thus knocking off some casting or other object that may have been insecurely placed. In the event of an injury of this kind, the crowded condition of the shop is not held accountable for it, as a rule—some other proximate cause being assigned. This is in accordance with the general principle that a thing or a person often bears blame that should rightfully be placed upon a condition.

It is an excellent plan to have so-called "dead lines" painted conspicuously on the floor to mark the limits of the aisles. Lines of this kind should be repainted whenever they tend to become indistinct, and foremen should see that nothing is allowed to extend over them. The advantages of wide, clearly defined aisles of this kind are numerous. They promote efficiency as well as safety, and men will use them in preference to the tortuous and narrow passages between stock piles and parts that may be lying on the floor.

LIGHTING IN MANUFACTURING ESTABLISHMENTS.

Our manufacturers have been very tardy in seeing the beneficial side of good lighting. Within the last few years employers have recognized the fact that good lighting increases production and decreases accidents.

Very often, however, good lighting is confined to certain sections of a building. There are many places in the average factory building where no manufacturing processes are carried on, and these often receive little or no attention so far as illumination is concerned. Reference is had to stairway, hallways, and passageways. Places of this kind, never intended for manufacturing use, are likely to be neglected until they fall into a sad state of disrepair. There are hundreds of overhead gangways, stairways, and other passageways in our factories today which are nothing more or less than man-traps, in comparison with the working space with its guarded machines and modern and approved lighting facilities.

Most of the accidents on stairways or in passageways occur during the short daylight months of December, January and February. The "Health, Safety and Comfort Law" demands that proper lights shall be kept burning by the owner of a building in all main passageways, main hallways, at all main stairs, main stair landings and shafts and in front of all passenger and freight elevators, upon the entrance floors and upon the other floors, on every work day of the year, from the time that the building is opened for use until the time when it is closed.

To provide safe stairways this law further demands that handrails must be provided and that the treads be so constructed as to furnish a firm foothold.

One accident report tells about a woman employee walking along a dark hall and stairway so poorly lighted that she failed to see the first tread and fell down an entire flight of stairs, wrenching her back severely. Another case reported a terrible accident to a carpenter who was in a building to do some repairing. He was walking up a dark stairway when his foot caught in a defective tread. He fell with a hand full of sharp tools, a chisel entering his right shoulder to a depth of three inches. In another instance a horrible accident is recorded. A girl was walking along a dark passageway carrying a basketful of small steel discs, which she had been ordered to take to the rear of the building. She heard some one walking ahead of her, but could not see that the man was carrying iron piping. In her hurry she ran against a protruding piece of the piping, which entered one of her eyes, the use of which was lost in spite of the best surgical treatment.

Unlighted, defective or obstructed stairways are vicious abodes of accidents. A fall down a defective stairway generally means no stop, until the next floor below is reached. Obstructions, such as pails, brushes, brooms, mops, etc., should never be left on the stairway. Ordinarily one does not expect to meet with such obstacles and consequently is unprepared.

The lights in hallways or on stairways should be equipped with reflectors arranged in such fashion that no part of the electric filament or gas flame or mantle strikes the eye of a passerby. It is a grave mistake to install a wall bracket or an unshaded lamp suspended from the ceiling. In either one of these cases the person is blinded by the direct

light. Lighting systems require just a little thought. It is usually just as economical and safe to provide proper illumination as it is to provide lights that are ineffective or dangerous.

Proper lights will avoid loss of wages to employees, loss of revenue to employers, and other items entering into the cost of an accident. An electric light burning all day long represents a small monthly outlay.

In general, good lighting in workshops not only facilitates the work directly, but is of the greatest indirect value because of the feeling of security and cheerfulness given the workers. This fact is becoming more recognized each day. Direct artificial lighting has long been in use, and recently there has developed a movement for increasing the effect of daylight by means of white enamel. One firm having several punch presses painted with this material. The ceilings and walls were also enameled white. It is claimed for the enamel that it is oil-proof and will not turn yellow. It is reported that remarkable results in the way of better lighting and the elimination of shadows are obtained in this way, these results being due to the fact that black absorbs the light while white reflects with little loss.

VENTILATION AND HEAT IN FACTORIES, MERCANTILE ESTABLISHMENTS AND WORKSHOPS.

The problem of proper ventilation in factories has been recognized as one demanding immediate attention. During the past year special squads of inspectors investigated the ventilation in the larger factories. Until this time the efforts of the department in this direction had been very lax; but after outlining the numerous tasks imposed upon this department by nine different statutes and arranging the inspection work systematically, a point was arrived at where some time could be devoted to the ventilation problem despite the small number of inspectors placed at the disposal of this branch of the State service.

Before entering into a discussion of the necessity for pure air, it is advisable to state the statutory requirements on this subject. Section 11 of the "Health, Safety and Comfort Law" prescribes the amount of fresh air and the means of its supply for every employee in any factory, mercantile establishment, mill or workshop.

Every employee is entitled to at least 500 cubic feet of air space, except where lights are used which do not consume oxygen, in which case 250 cubic feet of air space will be sufficient.

No artificial means of ventilation are necessary for rooms having at least 2,000 cubic feet of air space for each employee and having outside windows and doors whose area is at least one-eighth of the total floor area. However, in this instance while no artificial means of ventilation are required, the rooms must be properly aired at the beginning of each work day and during meal hours.

Artificial means of ventilation, supplying at least 1,500 cubic feet of fresh air for each employee during each working hour, are required when the rooms have more than 500 but less than 2,000 cubic feet of air space for each person and the outside windows and doors equal one-eighth of the floor area. In this instance the ventilation system must be in operation, when the outside temperature requires that the windows be kept closed.

Artificial means of ventilation, supplying 1,800 cubic feet of fresh air for each employee during every working hour, are mandatory in the following two cases:

1. Where the room has less than 500 cubic feet of air space for each employee;
2. Where rooms in which the outside window and door area is less than one-eighth of the floor area.

During the previous 6 months 254 workrooms in 178 factories were investigated with reference to compliance with this section of the law. These 254 workrooms accommodated 23,757 employees. It was found that, of the 254 workrooms, only 9 were satisfactorily ventilated, whereas 245 of the rooms required the installation of new systems or improvements on existing systems. One hundred and seventy-five of the 245 workrooms were ordered to comply with the provisions of the section requiring artificial ventilation to the extent of 1,500 cubic feet of fresh air for each person per hour, and the remaining rooms (70) had to install means to supply artificially 1,800 cubic feet of fresh air for each person per hour.

The fresh air supply must not be taken from cellars or basements, and should be taken from a point not less than 20 feet above the ground.

The human system demands pure air and proper temperature. The economic loss is estimated to be an important item, when pure and fresh air is not supplied to the working men and women. In the manufacturing industries rooms without proper ventilation rapidly become overheated. The air becomes foul and filled with dust, gases, fumes, or vapors. The mental faculties of the workmen are rapidly affected and their productive value is greatly diminished. Foul air increases the employees' susceptibility to disease. Pneumonia, tuberculosis, grippe and other affections of the respiratory organs follow.

The necessity for fresh air will be readily understood from the following explanation. Air inhaled into the lungs comes into contact with the blood through the thin walls of the air cells. The oxygen contained in the inhaled air is absorbed by the red blood corpuscles and carried towards the heart. The oxygen is then conveyed through the arteries to the capillary blood vessels in all parts of the body, where it is given off to support the general combustion of the system. The blood absorbs the carbon dioxide and returns it to the lungs by way of the veins. It is expelled into the atmosphere by exhalation, along with any other impurities.

Employers after talking to inspectors about the necessity for ventilation and good air, rapidly acquire deep interest in this propaganda. In almost every case employers have asked the question: "What does pure air contain?" The answer is about 21 per cent of oxygen and 79 per cent of nitrogen. A small quantity of carbon dioxide and other gaseous substances are mixed with these gases. The air delivered from the lungs through the process of breathing contains about 3.5 per cent carbon dioxide, 17 per cent oxygen, with approximately 6 per cent moisture.

Vitiated air results in danger to everybody in the same room, but its harmful effects are not due so much to carbon dioxide as to exhaled impurities and other constituent gases. In small quantities carbon dioxide is not harmful. Carbon dioxide prevents the oxygen in the air

from performing its functions and its presence indicates unhealthy atmosphere.

Until recently it was generally assumed that a sufficient amount of air was the main feature of good ventilation. The fact is, that the air must be pure and remain in constant circulation. Pure air must contain the proper amount of food for the body in the form of certain chemical properties and it must be heated in cold weather to a proper temperature.

Dust enters every establishment. In some places of employment the rooms are filled with gases, fumes and vapors. Some dusts merely irritate, whereas others contain poisonous matter. Dust is not a necessary evil, as some people would have us believe. In one Chicago factory this problem was solved by placing a pipe pierced with small holes at the windows. When it is necessary to open the windows, the water in the pipes flows in fine streams down in front of the window openings and is caught up below the window sill in a small trough. The idea of a system of this kind is that the continuous sheet of water catches all dust particles, likewise all other impurities, and floats them down the basin. In this manner the air coming into the room is washed.

There are three methods of ventilation: 1. natural ventilation; 2. ventilation induced by heating the outgoing air; 3. forced ventilation.

Natural ventilation is by no means satisfactory under all conditions. Natural ventilation depends upon atmospheric conditions. This method allows the fresh air to come in through open windows and the foul air is supposed to be carried off through flues or chimneys. A vexing problem arrives, when cold or rainy weather sets in, which requires windows to be closed, thus shutting off the supply of fresh air. Flues and chimneys are very often faulty or neglected and their efficiency depends upon the proper draft of air which in turn is regulated by winds and the climate.

The second method of heating the outgoing air is done by drawing the air out of the room through a flue which contains a gas jet or steam coils. By means of these jets or coils an upward current of air is manufactured. This system involves expense and depends on climatic conditions. There is little to be said in favor of this system.

The third system enumerated above is forced ventilation. There are three kinds of mechanical ventilation: (1) the exhaust; (2) the plenum; (3) the combined plenum and exhaust.

Generally, no special provision is made for the entrance of air with the exhaust method. By means of a fan located at an appropriate place and discharging into a flue or to the outside, a slight vacuum is created in the room. There is sufficient leakage of air through doors and windows. In rooms where dust, gases and fumes are present, this system is advisable. With this method some provision must be made to heat the entering air in cold weather.

The plenum method is the reverse of the exhaust. By this method the air is forced into the room and is discharged through an opening. The temperature, volume and purity of the air may be readily regulated by this system, the air being taken at any suitable point in the room. In case of the exhaust system the air leakage is into the room, whereas by this method the air leakage is from the room due to a slight pressure in the room. The plenum system accordingly does away with the danger of cold and injurious drafts. For such rooms as contain much smoke or a

great quantity of dust or fumes this system is not practicable, as the small openings in the room would not permit a sufficiently rapid escape of the fumes and smoke.

The combined plenum and exhaust method makes it possible to maintain an even supply of fresh air at any temperature and appears to be the most efficient system of the three. In a room where a large number of persons is employed, this system should be installed. This method is not dependent upon climatic conditions. By this method the fresh air is sucked in and the foul air is drawn out. These two operations are separate and distinct. The pressure in the room being equalized, the adequacy of this method will not be disturbed by opening of doors and windows.

Upon the completion of an adequate ventilating system, provisions for keeping the rooms at a comfortable temperature during cold weather must be made. In rooms where the work requires strenuous physical exertion the temperature should be between 60 and 65 degrees Fahrenheit. Where the occupations are less strenuous and mostly sedentary, the temperature should be between 68 and 70 degrees Fahrenheit. The normal temperature of the body is about 98.6 degrees Fahrenheit. It is important, therefore, to understand the conditions in each workroom, as a too rapid dissipation of the body heat will produce harmful effects.

The "Health, Safety and Comfort Law" states that workrooms must be sufficiently heated to afford proper comfort. Most factories use steam heat. There are four methods employed in heating buildings by steam: (1) direct radiation; (2) indirect radiation; (3) direct-indirect radiation; (4) hot-blast.

By the direct method steam is carried in pipes to any place. In factories the pipes are placed along the walls, under benches, or along the ceiling. This system is the most inexpensive and easily adapted for factory use. The air is heated by direct contact with the steam pipe.

The indirect radiation method requires steam pipes or radiators to be placed in flues. The air passes over the pipes before it enters the room and is warmed in that manner. This system is rarely, if ever, used in factories.

The direct-indirect system depends on pipes and radiators to heat the air by contact with them; but at the same time air from the outside is conducted to the base of the radiators, which is then heated and penetrates the room. This is quite a complicated method and seldom used in factories.

The hot-blast method does not require radiators or steam pipes. By this method the air is forced through or over a pipe containing heat by a mechanically operated fan. It is distributed in the rooms through flues. The mixture may be regulated to insure good ventilation and keeps the temperature even at all times.

DANGERS OF WOODWORKING MACHINERY.

Woodworking machinery is a prolific source of accidents. Many of the dangers about woodworking machinery are readily eliminated by use of the numerous and efficient guards on the market.

The most commonly used woodworking machinery to be guarded is:

1. Saws:
 - I. Circular:
 - (a) Rip saws.
 - (b) Cross-cut or cut-off saws.
 - II. Band saws.
 - III. Swing saws.
2. Jointers or buzz-planers.
3. Shapers.
4. Surfacers.
5. Sanders.
6. Lathes or turning machines.

There are scores of other kinds of dangerous woodworking machinery used in certain industries, such as dowel pin machines, gang dovetailers, carvers, heading machines, rod machines, double saw and chuck machines, tenoners, grooving saws, miter saws, drag saws, equalizing saws, edgers, matchers, slab slashers, mortisers, boring machines, nailing machines, rotary veneer cutters, splicers, slashers, segment saws, veneer clippers, stave bending machines, power punching and flaring machines, trussing machines, hoop machines, crozers, stave and heading planers, stickers, felloe machines, throaters, axle machines, header or smoother machines, disk sanders, sanding belts, butting saws, relishers and wedge cutters, blind slat machines, panel raisers, wood trimmers, resaws, knot saws, clip saws, knee bolters, etc.

The "Health, Safety and Comfort Law" provides that all of the above mentioned dangerous machines must be guarded in addition to all other points of danger in woodworking shops, such as gears, belts, pulleys, shaftings, elevators, floor openings, etc.

To show how necessary guards are on woodworking machines we cite the following reports of accidents:

A boy aged 15 was killed when he fell against a circular saw while at work in his brother's sawmill. The blade severed the head from the body.

Joseph M——— suffered a painful injury when his hand became caught in a buzz saw. His little finger was severed and the other fingers were cut to the bone.

David P——— was engaged in his usual work when he fell against a rip saw. His right foot struck the saw and he received a frightful cut that nearly severed the foot.

C. C. P. had a finger severed and his entire hand terribly lacerated by a circular saw. He was ripping lumber, when his hand slipped into the teeth of the whirling saw.

George A——— sustained such serious injury to his right wrist by a rip saw that necessitated the member being amputated.

Walter L——— got his right hand caught in a circular saw and suffered the loss of three fingers. Two of the fingers are gone entirely and the middle finger was severed at the second joint.

William H. N——— met with a severe accident last night at the ——— saw mill. One thumb was entirely cut off and two fingers on the same hand severed, while the thumb and one finger of the other hand were partially severed. He was making an adjustment of the saw gauge, and the wrench he was using slipped. To save himself he threw his hands into the saw.

John R——— suffered the loss of the middle finger of his right hand on Monday, when the members came in contact with a buzz saw which he was operating.

Joseph M——— was instantly killed, and Albert G——— was injured by the breaking of a band saw at which they were working in the —— company's works. M's brain was pierced by several pieces of the steel.

Albert C——— had his two fingers cut off in a jointer machine. The accident happened to his right hand.

Edward M———, 20 years of age, a machinist, was working at a buzz planer when his overalls were pinned in the machine, thus drawing his body into the machine's bed far enough to fracture parts of the pelvic region. His cries of agony brought many of his fellow shop workers to his aid. He was taken to the hospital, where he lingers between life and death.

Circular saws are used in almost every woodworking establishment. There are two general classes of circular saws: rip saws and cross-cut or cut-off saws. There are many dangers common to both of these types, and numerous guards have been devised to afford protection from accidents in connection with them. Sawyers should never stand directly in line with the saws, but rather to one side of them, in order to avoid the danger from "kick-backs" caused by the saws becoming pinched or striking knots or cross-grained sections of wood. Heavy padded leather aprons should be worn by sawyers, when it is necessary for them to stand directly in line with the saw.

Some workmen are addicted to the dangerous practice of placing their hands against the side of the saw blade to stop the motion of the saw after the power has been shut off.

The bearings of circular saws become worn and cause the saw to wobble, which creates a dangerous condition.

No cleaning, oiling or repairing should be done, either above or below the saw, while it is in motion.

Circular saws should be provided with hoods or other effective guards. A guard of this kind should be strong and automatically adjust itself to work of different thicknesses. It is necessary that the guard be deep enough so that the crown of the saw will not come in contact with it, and must further be so arranged that the sawyer will be able to see the line of cut.

The splitting wedge or spreader is equally important on rip-saws, as it prevents the off-bearer from placing his hand against the back of the saw blade, and also precludes the binding or pinching of the wood, which often causes kick-backs, resulting in injury to the sawyer. The spreader should be made of the best quality of steel, so constructed that its front edge is slightly thinner than the saw blade and the body a trifle thicker than the blade. If saws of various thickness are employed, spreaders of corresponding thicknesses should be secured. The spreader should be securely fastened in position and be in true alignment with the saw blade.

When finishing cuts, sawyers should use substantial push sticks. Pushing the first piece by use of a second board should be avoided.

The ordinary type of rip-saw is not as safely operated as the self-feeding type, which should, nevertheless, be provided with a hood or guard. The feed roll should have a stout guard placed over it so that the workmen's clothing will not be caught and drawn in. Besides the feeding roll another roll is sometimes placed at the back of the saw to remove the sawed stock; and, when this is provided, it affords considerable protection to the off-bearer by making it unnecessary for him to place his hands near the saw.

Although circular cross-cut saws are less dangerous than rip saws, they cause many serious accidents and should be provided with hoods. Many accidents happen, because workmen use the rip saw for cutting-off work, and vice versa. This should be prohibited.

Swing saws should be provided with a hood, covering the upper half of the saw and extending down on the side on which the handle is attached, so that the operator will not be exposed to danger when grasping the handle. Counterweight adjustments on swing saws should be securely fastened in place on the swing-bars so that they cannot work loose. The swing or travel of the saw should be confined within safe limits by a chain attached at one end to the lower part of the saw frame, and at the other end to some fixed object. Ropes should never be used for this purpose. Fencing should be installed at the rear of swing saws, wherever they are located, so that workmen or other persons may pass behind them. All belt-driven swing saws should be provided with substantial belt shifters.

Band saws cause numerous accidents, but the greater portion of them may be avoided by the use of proper guards. It is comparatively easy to completely inclose both the upper and lower wheels, and also the entire length of the blade except at the point of work. Sliding guards should be provided for the exposed parts of the blades at the point of work, and these may be adjusted to suit the varying thicknesses of the work. Operators of band saws are likely to be cut about the head, unless guards of this kind are attached, as they often lean over to see the saw line more closely, and thus come in contact with the blade. Unless an automatic tension-control is provided by the makers, the tension on the band saw when stopped should be somewhat relaxed; because contraction takes place when the blades cool, and is liable to strain the blades or even break them. Band saws should not be operated when the temperature of the workroom is low, as the blades will break when the machine is started.

A belt shifter, in connection with a tight and loose pulley, or some other effective device, should be provided for each machine; and the drive belt should be guarded to a height of six feet above the floor, when the power is transmitted from an overhead line of shafting.

Slippery floors in front of saw tables often cause accidents. Rubber mats or other non-slip material at these points prevent sawyers from slipping and falling against the saw blades or other moving parts. Rubber mats should be fastened securely to the floor and kept free from sawdust.

Like shapers and circular saws, unprotected jointers or buzz-planers are always dangerous. These three kinds of woodworking machines probably cause more accidents than any other types. However, jointer and

planer accidents have been decreased both in number and severity by the invention of the safety cylinder head which has replaced the old-style square heads. Even with the safety heads guards must be provided. "Kick-backs" are less frequent when the safety heads are used; shorter stock can be planed, and there is less vibration than with square head type. Illustration No. 23 shows an effective jointer guard. Jointer guards are divided into two general classes—automatic type, and rising or sliding type. Each of these forms have certain advantages which are lacking in the other; nevertheless, accidents are effectively reduced by use of either one. The guard is pushed aside by the entering piece of wood in the automatic type, and closes immediately after the stock has passed through. In the rising or sliding guard, the stock passes under the device and the hands pass over it. In the automatic guard, the knives remain unprotected for a moment just before the cut is started and just after it is finished; but does not require the hands to be removed from the material at any time, as with the rising or sliding guard. The latter type requires much adjustment for work of various thicknesses. Guides must be set exactly at right angles with cutter heads, otherwise the stock will twist or turn as it is fed in.

The edges of the opening in jointer tables should always be provided with steel lips. Without them the edges gradually wear away, thus increasing the width of the openings and likewise the chance for accidents.

The bolts that secure the knives should be drawn up tightly. The driving belt should be removed, when making repairs; or the belt-shifter handle or power switch should be locked, so that a machine cannot be started unexpectedly.

Illustration No. 26 pictures a hood guard over a stave jointer with suction system.

Guards for shapers are a difficult problem, because the work done by these machines is so varied that it is almost impossible to supply guards that will be suitable under all conditions. Shapers are the most dangerous of all woodworking machines. As a rule, the material must be guided by the hands. The knives revolve at high speed to insure a smooth cut, therefore the hands are apt to suffer in the case of a "kick-back"; or if a knot or a cross-grained shot occurs, or if the material breaks at a thin spot, or a glued joint pulls out.

The shaper guard shown in Illustration No. 24 is fairly effective and has reduced accidents to a considerable extent.

Belts with cemented joints are recommended for use on shapers.

Exhaust systems are often installed in connection with shapers to remove shavings and small chips. Where these are used the necessity for brushing off the table is obviated. Illustration No. 25 shows a suction pipe system on a sticker machine, indicated by figure "A". Figure "B" covers the gears, Figure "C" the belt and pulley and Figure "D" shows the belt inclosed to a height of six feet.

In addition to the regular precautions against loose clothing, adequate light is also essential, because many accidents are due to insufficient illumination.

THE DANGERS OF BELTS.

Unguarded belts are as dangerous as exposed shafting. Many serious accidents have been charged to improper methods of handling belts and to lack of adequate belt guards. One source of danger lies in the careless method of shifting belts by hand or short sticks. Invariably some part of the workman's clothing is caught in the moving belt, either throwing the man to the floor with violence, or else he is drawn into the moving pulley and wound around the shafting.

Another source of danger is created when belts are removed from pulleys and permitted to hang from revolving shafting. Sometimes the belts are caught on set-screws, the bolt heads or other projections on the pulleys or shafting and entangle workmen standing near by. The case is reported of a workman, who was raising an overhead belt, when the belt started to twist. The man was drawn up on the shafting and carried around at terrific speed, severing his head, both arms and both legs from the body, the remainder of which was horribly mutilated.

Gustave B———, while adjusting a belt, had his clothing caught and was crushed to death against the ceiling.

Henry S———, a machinist, was adjusting a belt when in some way he became entangled; and in a twinkling his clothing was almost entirely torn from his body, his right arm was broken and a gash was cut in his head.

C. Henry S., member of the firm of H. S. & Sons, had gone into the cellar to put on a belt which had slipped off the line shafting. While Mr. S. was engaged in the work, something happened, but exactly what happened nobody knows. Within a few seconds after he had tried to put the belt in place he had suffered a gash along the right side of the throat. Whether the belt slipped off and the ragged edge cut him, or whether he was thrown against some sharp edge producing the wound, no one knew. The wound is about seven inches in length, being a laceration of the interior part of the throat, involving some of the muscles of the neck and some of the smaller blood vessels. Had the jugular vein been severed, the results would have been fatal.

Matthew W——— leaned over to pick up a tool and fell upon a belt. The belt, one of the biggest in the factory, picked the machinist off his feet and he was whirled towards the ceiling. His right arm was broken and he suffered severe bruises on the top of his head.

Rolland E——— was caught in a belt and thrown to the ground with great force. His right hip was badly dislocated, his chin was so badly cut that a number of stitches had to be taken, and he had other hurts of a less serious nature. It took three doctors to get the dislocated hip back in place. The doctors pronounced the dislocation one of the worst with which they ever dealt. It will probably be three months before he recovers, the doctors claim.

Michael H——— was making repairs on a piece of machinery and was standing on a pulley to enable him to reach the parts on which he was working, when he gave the signal to start the mechanism. He was pulled off his feet and caught in the belt. He suffered a compound fracture of the right leg and several severe bruises and was possibly injured internally.

William B——— was caught in the belt of a machine he was operating. He is of the impression that his coat sleeve caught in the belt fastening. He was jerked off his feet and was whisked toward the ceiling with lightning-like speed. He was twisted about the shaft and this action seemed to tear his clothing free from the belt. The upper bone of the arm was broken and there was a compound fracture of the bone in the lower arm.

Lacing belts without stopping the machinery should be prohibited. The hands of workmen are often torn, especially when the ends have been joined by metal clips or wire lacing.

In most cases it is a simple matter to guard belts without great expense. All horizontal belts less than seven feet from the floor, and all vertical and inclined belts should be inclosed by strong guards of wood or perforated steel. Inclined or vertical belts should be inclosed up to a height of six feet. Railings are often used and these should be at least four feet high and have double rail with wire mesh between them, where located less than eighteen inches from the belts. Efficient guards may be made of wood, wire-mesh netting, expanded metal, but the perforated steel appears to be the most substantial.

Low cross belts over passageways should have a metal guard installed beneath the belt and should be enclosed to the pulley end. Drawing No. 35 shows the method of placing such guards. The reason for bringing the guard up to the ceiling is, that when a belt breaks it cannot then fall and strike those standing nearby. The following account shows the necessity of heeding these instructions: Oscar S——— was hit on the head and scalped, when a belt snapped near the ceiling and the end of it struck S——— on the head. When the casing is built to the ceiling and a belt snaps, no danger can result, as the belt will remain in the enclosure and slide down. See Illustration No. 35.

When belts are removed from shafting, they should never be permitted to hang down. Hooks or perches should be installed near the pulleys for the purpose of hanging belts on the same.

Except in the case of fast and loose pulleys, a space greater than the width of the belt should be left between every pulley and the one nearest to it on the same shaft. If this is not observed, there is danger of the belt becoming wedged and pulling the line shafting down. However, if this method is not feasible, then the spaces should be guarded, so that the belts cannot get into them.

Employees should never be permitted to step over moving belts or under one hanging from the ceiling. The safe method is to construct a platform over belts near the floor and canopies under belts hanging dangerously low from the ceiling. See Illustration No. 36.

Dressing should always be applied to belts on the side that is moving away from the nearest pulley. Cotton waste or cloths should never be used to wipe the faces of moving pulleys.

Several injuries were reported due to flying clips. The metal clips joining the ends of the belts worked loose and the speed of the revolving machinery caused them to fly through the room. Charles H. G——— was struck by a flying metal clip of a belt and practically had his eye gouged from its socket. It was necessary to remove the entire eye.

James W——— was painfully injured when a steel clip unfastened on a belt, striking him on the forehead.

REVOLVING SHAFT ACCIDENTS.

Several years ago one of our inspectors while going through an establishment noticed an unguarded revolving shaft and called the attention of his guide, who was the superintendent of the plant, to this hazard point. Turning toward the superintendent to give him further instructions, he noticed tears in the eyes of the man, who addressed the inspector in this manner: "Don't pay any attention to me. Just a year ago my son, whom I was bringing up to be manager of this plant, was killed on that shafting."

Just a year after that horrible accident the inspector found the same dangerous condition. Thousands of men are just as hard to convince as this superintendent, that at points remote from belts and pulleys there are any hazards associated with smooth shafting that has no projections of any kind upon it. Nevertheless, serious and even fatal accidents are reported every week caused by loose clothing or hair of persons coming in contact with such shafting and being wound around it.

The following accident reports illustrate the degree of danger lurking about exposed shafting:

Oliver H——— had a narrow escape from death when he became entangled in a whirling shaft. He was badly injured and his rare presence of mind probably saved his life, as he got at his knife and cut himself away.

Charles H. B——— had his right leg caught in a shafting. The clothing was torn away and the limb badly injured.

Ezra H——— was whirled around a shaft in a creamery and every stitch of clothing torn off. He was seriously injured.

E. H. F——— was employed as an oiler. He fell from a ladder on some shafting and was pinioned beneath it upon the floor. He was unconscious when picked up by the workmen and died in the hospital one hour later.

William L———, a brewery worker, had a very narrow escape from death when his jumper got caught on a shafting and he was whirled through the air. L——— in a stooped position tried to slip underneath the shafting, which was revolving at a great speed, when his jumper, which was hanging loose, was caught by the shafting and was twisted around and around until it drew the man's body about the shafting and kept on whirling him around. Other workmen, who were nearby, heard the man's terrified calls for help, and ran to the scene. One of the men had presence of mind enough to stop the machinery and release L———.

Oriste A——— was caught by a rapidly revolving shaft while trying to throw a belt on a pulley which whirled around him several times, his head and body striking the crossbeams of the roof. The machinery was stopped as soon as his predicament was discovered. Drs. C and G found him suffering from a fracture of the skull, of the right thigh, of both bones of the left leg, and of the left forearm. There was also a bad laceration of the head. The physicians caused the man's removal to the hospital, where he died the next morning. The evidence indicated that the deceased had climbed up on his machine in order to

throw on the belt and an unbuttoned sleeve caught on the shafting. A——— usually had been noted for his caution, always carefully buttoning the wristbands of his jumpers before approaching the machinery. Today, however, he left the sleeve unbuttoned. The whirling shaft caught it and then took his arm, shivering the bone like an eggshell. He was 35 years old and leaves a widow and three children.

George I——— was working near shafting while it was in motion, and his sleeve caught and wrapped his arm around it and broke it in four places. He was in a serious condition.

Wilbert A. R., foreman of the —— Co. plant, was instantly killed when his clothing was caught on a rapidly revolving shaft, and he was whirled to his death before he could make an outcry. About 10:30, R——— descended through one of the manholes in the floor to oil the shafting which is located below the floor. Sometimes the machinery has been stopped to do the work, but the foreman has done it with the shaft in motion. He was gone longer than usual and when found in the basement, was lying dead on the floor. His vest was still hanging to the shaft, telling the story of the accident. He was 38 years old and is survived by his widow and one son.

Joe J———, an employee in an ice cream factory, was a victim of an accident that will make him a cripple for life. His foot slipped and his body was tightly drawn about the shafting and whirled several times, his limbs striking the ceiling, one being so terribly mangled that amputation was necessary. The physicians in attendance fear that the nature of the injuries are such that the injured man cannot recover. His injuries were found to include crushed bones above and below the knee, face and head cut, dislocated shoulder and bruises all over the body. At the injured man's first outcry, the proprietor looked up and saw what was happening. He was a short distance from the switch that is used to shut off the electricity that drives the machinery. He rushed to the switch and turned it off.

It is needless to recite the numerous fatal and nonfatal accidents caused by unprotected shafting. According to the "Health, Safety and Comfort Law", shafting must be guarded and this department will insist upon it.

To avoid accidents of this class, all shafting within 7 feet of the floor should preferably be completely boxed in; or, if this is not practical, a loose sleeve should be placed upon it, so that the sleeve can remain stationary while the shaft revolves inside it.

See Illustrations Nos. 7, 31, 32, 33 and 34.

DANGER POINTS ABOUT LATHES.

The safety operation of lathes is demanded by section 1 of the "Health, Safety and Comfort Law". There are numerous danger points about a lathe, most prominent of which are gears, driving belts, pulleys, shafting, dogs with projecting set screws. Also danger is created by certain classes of work being turned out on the lathe. The manufacturers of modern machine shop equipment are delivering their product more or less completely guarded.

It is safe to say that the majority of lathes are provided with cone pulleys for speed variation, which means that the belts must be changed

from one step of the pulley to another. Belts should never be shifted by hand. If poles are used they should be long enough, so that the operator may change the belts without reaching up unnecessarily. Cone belt-shifters are on the market, but have not been generally adopted. These devices do away with changing belts by means of poles or sticks.

Individual motor drive is being installed to lathes in many shops. In some cases the motors are geared directly to the machine, while in other instances power is transmitted by short belts. This is the ideal safety arrangement; since dangerous countershafts, belts and gears are eliminated. This method of driving lathes should be given serious consideration, when new installations or new equipments are being planned.

Illustration No. 27 shows effective guards for gears and cone pulley. The gear guard is open. While the lathes are running, guards should be kept in position. Illustration No. 28 shows the change gear guard of an engine lathe open. Note cone pulley brake.

The "Health, Safety and Comfort Law" provides that machinery must be stopped, before removing any guard for cleaning, oiling, repairing or adjusting. This rule should be insisted upon by the shop foreman. Reaching over the lathe to change the back gears before the machine has come to a dead stop, is dangerous and practice of this kind is not only contrary to law, but displays poor shop discipline. Taking chances of this kind often results in serious injuries by parts of clothing being drawn into the machine. If gears are changed while the machine is in motion, the lathe itself is likely to be damaged.

When removing filings or chips from a lathe, a brush should be used, otherwise the bare hand is apt to receive severe cuts. While standing near a moving machine or any part of same, clothing should never be changed.

The habit of leaving tools on any part of the machine or on places from which they may be jarred or pushed, should be avoided. Tools, when not in use, should be placed in tool boxes or racks.

Accidents are often caused through insecure placing of a tool in the tool-post, causing the tool to "chatter". Turning or breaking either of the lathe tool or the piece that is being worked upon has resulted in injuries. In instances where the tool starts to "chatter" the lathe should be stopped immediately; as the tool is likely to catch on the work with the result that either the tool is forced out of the post, or the piece will be twisted out of the chuck, or both things might happen. On such occasions, the tool or the work may fly and injure the operator. Setting the cutting point of a lathe tool any farther out from the tool-post than is absolutely necessary should be avoided. A lathe tool should never be set below the center of the piece for external work. Lathe tools should be carefully selected and should then be firmly secured in the post.

Another point of danger is caused by improper filing. Using a file without a handle is common practice, yet every machinist should know that this is dangerous. The position in which a file is held is of utmost importance; as, even with the handle in place, the file may be pushed back against the operator's abdomen with terrific force. The file should always be held in such a manner that in case it is forced back, the handle will be pushed to the side of the body rather than against the stomach.

Sleeves should be rolled up tightly, so that they will not catch on projections on the work or on the face plate.

Other sources of accidents are the lathe dogs with projecting set-screws. Illustration No. 37 shows the manner in which the old style of lathe dog with projecting set-screws may be rendered free from danger by the use of a collar. In these days of "safety first", lathe dogs are made without projecting parts.

Solid bars are often used, out of which pins, bolts and other similar objects are machined. The bars frequently project several feet beyond the headstock of the lathe and revolve at considerable speed, presenting a source of danger similar to that of the unguarded shafting. These bars should be covered with tubing or else the space over which they extend should be railed off.

Face-plates and chucks should have smooth surfaces minus protruding set-screws or other projections. Before starting the lathe, after adjusting a chuck, precaution should be taken to see that the chuck wrench has been removed.

POINTS OF DANGER IN PRINTING ESTABLISHMENTS.

All gears, belts and pulleys, cylinder gears and bed-shaft gears are dangerous and should be effectively inclosed by substantial guards. Illustration No. 22 shows the method of guarding drive pulley and belt on a Gordon press. Rack gears and small fly gears should be covered by effective guards. Balance wheels or flywheels are sources of danger and special care should be exercised in guarding them. Sheet metal discs bolted or shrunk on the rims or faces of the wheels will avoid danger. Illustration No. 21 shows the methods of attaching metal discs to flywheels. Openings at the center of the guards should be provided for the purpose of placing a smooth cap over the large nut holding the wheel to the shaft.

Elevated platforms used in connection with automatic press feeders are hazard points and should have a substantial railing placed around them to prevent accidental falls.

Platen press flywheels should have guards similar to those used on cylinder presses, and all dangerous moving parts should be effectively protected. Illustration No. 20 shows a Miehle press. The letter "A" indicates the metal disc over the flywheel. This disc forms a smooth surface and does away with the danger of catching clothing and also prevents a workman from serious accident in case of falling against the wheel. When presses are operated by belts, the belt-shifters should be arranged so that they may be locked in the "off" position to protect the machines from being unexpectedly started by the creeping of the belts.

Folding machine operators are liable to injuries by having their hands or fingers drawn into the feed rollers while attempting to straighten the paper. Rigid guards should be placed in front of these rollers.

The knives of paper-cutting machines are apt to inflict serious injury. They should be effectively guarded. The knives of hand-power shears or cutters of large size should always be guarded, and counterweights on knives should be firmly secured in place so that they cannot work off and allow the knives to drop. All cutting machines should be equipped with some nonrepeating device which will avoid the possibility

of accidental starting of the machine. While removing, repairing, replacing or adjusting knives, the machines should be locked. When cutting close to the edge of the paper, the operator should avoid pressing against it with his fingers. A wooden block should be placed against it.

Another source of danger in print shops results from molten metal. Linotype and monotype machine operators frequently are burned. Linotype machines are dangerous in this respect, because the operator is seated in front of the machine and is likely to have the metal splashed into his face. The linotype machine is more dangerous than the monotype machine; because a greater amount of metal is used at each stroke of the plunger, as this machine casts a full line instead of a single letter. In the case of the monotype machine the caster man stands at his work. The danger in this instance is the likelihood of having the arms and hands burned. Hot metal is frequently ejected from the mold in the monotype machine when the matrix is improperly adjusted. A tight line or twisted matrix in the linotype machine will cause "squirting" of the hot metal. Metal shields should be placed in front of the molds to deflect the "squirt" of hot metal. Pigs should be perfectly dry before being thrown in the melting pot; otherwise, bubbles will rise and cause the metal to boil over.

All exposed belts, pulleys, gears, shafts, set-screws and bolts are dangerous and must be rendered free from danger.

Scoring, punching, stitching, perforating, envelope making and type-high machines (see Illustration No. 19) are also a source of danger and hazard points on or about them should be eliminated.

As a rule, print shops are poorly ventilated, composing rooms are generally permitted to be overheated or filled with impure air. Much has been said and written about the dust which accumulates on lead type. Dust gathers on standing forms or exposed cases very rapidly. The printer generally blows the dust off, or, in other words, sends the dust floating through the room, when it is readily inhaled by the workmen. Cases of type, generally weighing not more than 50 pounds, should be taken into the open air and cleaned out. Printers have the bad habit of removing the dust in the room by means of bellows. Illustration No. 18 pictures the ideal system of cleaning type and cases by suction or vacuum. Figure "A" represents the vacuum apparatus to which the metal hose "B" is attached. The printer in this instance is taking the dust out of the case on the table. Figure "C" is a screen, which is placed over the type case; the case is then inverted. The screen has the same partitions as the case to permit the type to fall into the proper compartments. When inverted, the screen acts as a sieve. The case is shaken and the dust falls through the screen. The empty drawer is then cleaned and placed over the screen, which is then turned up to permit the type to fall back into the case. The drawer and type are thoroughly cleaned in this manner in very short time, without danger of disturbing the correct order of type. Figure "D" shows the empty type cases.

On account of the lead fumes from the melting pots of monotype and linotype machines, exhaust hoods should be placed over the machines, so that the fumes may be removed and discharged to the outside air. Hoods must be of ample size and set low enough to prevent the escape of the fumes into the workroom. The suction must be strong and

continuous. Illustration No. 17 shows a hood to carry off lead fumes placed over a monotype machine.

The large amount of paper and the large quantities of waste from it are sources of fire hazards in printing establishments. Benzine used for cleaning type increases the fire danger. Automatic sprinkler systems should be installed in the larger printing plants.

Toxic poisoning from benzine vapors can be largely avoided by proper and adequate ventilation. In Bulletin No. 1 on pages 55-57 a description is given of a printer examined by the doctors of this department and found to be suffering from aniline poisoning. This man had been washing rollers with a black fluid. This fluid upon analysis was found to contain a composition of benzine and aniline oil (nitro-benzol).

Gas is generally used for melting the metal for linotype and monotype machines. Where practicable, iron pipes for all connections should be used; otherwise rubber tubing, maintained in good condition, will answer the purpose. Defective rubber tubing may cause fires and chronic gas-poisoning. Serious results to health may be produced by very small percentages of the carbon monoxide which forms an important constituent of gas, manufactured for illuminating and heating.

The individual motor electric drive is rapidly replacing steam or line power. Motors should be encased, especially if located on or near the floor. Switches and fuses of the enclosed type should be used to prevent electrical shocks and burns.

Lastly, employees should never attempt to oil, clean, repair or adjust machinery while it is in motion.

PROPER CLOTHING PREVENTS ACCIDENTS.

The dangers in industrial life are similar to those in ordinary life, differing only in form and depending largely upon the occupation of the employee. In a foundry the handling of molten metal adds a certain degree of danger which can be avoided by the use of proper clothing in addition to other protective devices.

SHOES PROTECT AGAINST BURNS.

The hazard in the foundry, which has been considered to be most serious because of its frequency, namely, burns of the feet and legs, can be almost completely counteracted by the use of proper clothing. The wearing of good foundry shoes of the congress type has helped to reduce accidents. The uppers of these shoes should be made from leather especially selected to afford comfort and flexibility and at the same time to withstand the heat and dampness incident to foundry work. The soles should be sufficiently stout and their edges should taper to permit spilled metal to slide off their edges rather than run into crevices between the uppers and the soles. Of most importance is the elastic goring which should be of good grade that will not weaken when it is stretched, else the shoes will gap open at the top and allow molten metal to enter.

LEGGINGS.

Foundry shoes alone, however, can only afford partial protection against molten metal hazards. Leggings especially designed for foundry service, or the proper kind of trousers worn with bottoms turned down, must do the rest. Most foundry leggings are made of canvas. They are

lower in price, lighter in weight, and more comfortable to wear than asbestos leggings, which are needed only in special cases on account of their fire resisting ability. The proper construction of foundry leggings is of primary importance. They must be so made that they can be pulled off without a moment's notice, yet fit snugly and comfortably. Canvas leggings suitably stretched and secured over spring clips, fill the above requirements and present a smooth outer surface free from obstructions, which is an essential feature.

TROUSERS.

Cotton trousers catch fire more readily than woolen trousers, although the old-fashioned cotton jean pants give good service in the foundry and shed molten metal quite readily. Cotton trousers, unless further protected by leggings, are an unsafe proposition in foundry work.

It goes without saying that shoes, leggings and trousers worn in foundries must be kept in good condition; otherwise, their protective value is lost and the employee may be confronted by danger, because he believes himself to be fully protected against all hazards, while in fact he is very much exposed to it.

GLOVES.

Furnace men require gloves for their hands and wear same as a protection against the severe heat. Usually calfskin or buckskin gloves or sleeves will answer the purpose, but in some cases asbestos gloves must be used. It is desirable that these gloves shall not be so thick or so clumsy as to interfere with the safe and easy handling of furnace tools. When men pour metal continuously, the ladle shanks become hot, in which case cheap canvas or leather gloves are used to good advantage. Fenders attached to the ladle will minimize the heat and sometimes a short piece of rubber hose is slit and secured to the ladle shank to provide a comfortable hand grip.

For handling pig iron, scrap, rough castings or hot castings, suitable gloves of leather or canvas will offer the necessary protection. The gloves should have elastic gores around the wrist. Both sides of the hand should be covered. In pickling processes rubber gloves are used with satisfactory results.

APRONS.

In the latter work employees frequently must use rubber aprons, rubber boots or overshoes, not only to save their clothing, but to prevent injury to themselves. Aprons offer protection in other branches of foundry work. They also add to the comfort of the employees, as when they must carry flasks or rough or hot materials in such a way that they are partly supported against the abdomen or chest, or when grinders similarly support castings against the grinding wheel.

SAFETY GOGGLES.

The protection of the eyes of foundry employees against splashing of metal when pouring it, or flying of chips in cleaning and grinding operations, is a matter of deep concern to foundry help. Such injuries often result in the loss of the sight of one eye or even both. Some burnt eye injuries may be avoided by extraordinary care, yet there is no secur-

ity against such accidents except through the wearing of safety goggles. Cupola furnace men especially are subject to these injuries because they work for hours around splashing molten metal. Open hearth furnace men require goggles. In this instance the goggles should contain cobalt blue lenses which will enable men to determine the condition of the metal. Oxyacetylene welders and electric arc welders must protect their eyes against excessive heat and glare. The goggles of the acetylene welders should contain dark green lenses. Electric arc welders should be provided with heavy lenses which are usually made by combining several thicknesses of blue and red glass. Grinders and chippers whose eyes may be readily injured by flying chips or grit should always wear safety goggles. Safety goggles should have large flawless lenses, ground on both sides, so as not to injuriously affect the vision, and both lenses in any one goggle should be carefully matched to obtain fair uniformity of thickness and color. Care should be taken to have the goggles at all times fit well around the eyes, neither so tight as to cause discomfort, nor so loose as to leave dangerous openings.

It is not only essential that workmen should wear clothing that affords safety as well as comfort in their employment, but it is equally important that such clothing should be kept in good condition and worn in a safe way. Foundry shoes or any other kind of shoes are unsafe, if their soles are worn so thin that nails, slivers or turnings will easily cut through, or if their uppers are cracked or if the goring gaps so badly as to invite molten metal to enter the shoe. Loose, ragged or turned up trousers are a menace when worn in the foundry. The men who wear loose belts, ripped or holey gloves, dangling sleeves, flowing neckties or other loose or torn clothing, when working about moving machinery, invite disaster to themselves. Many injuries have been reported which have been caused by contact of moving machinery with finger rings worn by mechanics. Such rings should not be worn by men who work where such a hazard exists. Repairmen who must work in high positions in the midst of moving pulleys, shafting and belts, need to be particularly careful in this respect, and should keep their clothing snugly buttoned or belted. Tightly fitted leather leggings, closely buttoned jumpers with short sleeves and a generally "trimmed for action" condition will facilitate their work and allow them to do it with reasonable safety.

When a man wears proper clothing he feels comfortable; he can then work at his best. Many employers readily recognize the common sense of thus adding to the efficiency of their men, at the same time protecting them from injury.

OCCUPATIONAL DISEASE DIVISION—REPORT OF INSPECTIONS AND MEDICAL INVESTIGATIONS.

The Occupational Disease Act was drawn following the report of the Committee for the Investigation of Industrial Diseases in this State. It provides in general for the protection of certain workers engaged in occupations considered extra hazardous and safeguards the worker by compelling the employer to institute medical examinations of his employees, install adequate washing facilities, a place where the employee may take his meals apart from the workroom. And further than this the Act compels the employer to furnish proper working clothing for

his employees and to safeguard them from poisonous fumes, dusts and gases by the installation of adequate methods of ventilation.

The Illinois Act was pioneer legislation in America toward human conservation in this field and as such must be regarded largely as an educational measure. While one must admit that by reason of its scope convictions have not always been easy to secure, yet its breadth on the whole must be considered an asset rather than a drawback. General acceptance of the spirit of the Act as well as the letter has been the rule among the larger corporations of this State almost without exception. Prosecution has been resorted to only exceptionally. We believe, after three and a half years' experience of its enforcement, that our Act compares most favorably with existing legislation in other states in this field.

We feel that the workman exposed to the hazards of occupational disease is just as much entitled to the benefits of the "Compensation Act" as his coworker under the "Health, Safety and Comfort Act"; and we perceive no reason why he should not enjoy the same privileges; however, until the scope of our present "Compensation Act" is broadened to include occupational disease, there is but remote possibility to secure compensation for loss of health, because a lawsuit is generally determined by the weight of medical experts testifying in such proceedings.

Table No. 1 shows the number of inspections made by the medical inspectors to enforce the provisions of this law. Inspections were made in 26 cities and towns, not including Chicago. In the course of the year, 595 inspections were made in 357 establishments located in the various parts of this State. These inspections necessitated the issuance of 79 orders.

In the city of Chicago 331 inspections were made in 192 establishments visited and required 36 official orders. In the other 26 cities and towns, 264 inspections were made in 165 establishments, of which 43 received official orders.

Very frequently the medical staff makes inspections under the "Health, Safety and Comfort Law" jointly with other inspectors, but the number of such inspections is not included in the following table.

TABLE NO. 1—RESULTS OF INSPECTIONS UNDER OCCUPATIONAL DISEASE LAW.

July 1, 1914, to June 30, 1915.

City.	Number of establish- ments.	Number of inspec- tions.	Official orders issued.
Chicago.....	192	331	36
Alton.....	4	7	1
Aurora.....	5	7	1
Blue Island.....	9	11	4
Centralia.....	2	2	.....
Chicago Heights.....	10	14	6
Danville.....	6	6	1
Decatur.....	5	5	1
East St. Louis.....	8	9	3
Elgin.....	4	4	.....
Evanston.....	7	16	3
Granite City.....	2	2	.....
Harvey.....	6	16	4
Joliet.....	5	6	1
La Salle.....	4	4	.....

TABLE NO. 1—Concluded.

City.	Number of establish- ments.	Number of inspec- tions.	Official orders issued.
Maywood.....	10	16	4
Moline.....	5	7	.....
North Chicago.....	12	22	5
Peoria.....	6	7	1
Plano.....	2	2	.....
Rock Island.....	4	4	.....
Sandoval.....	2	2	.....
South Deering.....	5	11	.....
South Chicago.....	11	28	3
Springfield.....	3	4	.....
Waukegan.....	14	25	2
Woodstock.....	8	13	2
Zion City.....	6	14	1
Total outside City Chicago.....	165	264	43
Total entire State.....	357	595	79

The following tabulations present the number of monthly medical reports received during the year from July 1, 1914, to June 30, 1915. The table shows the number of firms reporting each month, the number of sick and well employees. Two main classifications are given, cases of sickness due to lead poisoning and cases due to other industrial poisons. These two groups are in turn divided into industries according to the nature of business of the firm reporting.

Batteries:										Loss muscular strength, anaemia, abdominal tenderness, constipation, tremor, headache, loss in weight, pallor, coated tongue, albuminuria.....										A	M	30 days.										
1	12	10	12	11	9	6	Lead moulder.....				Anaemia, blue line, constipation, tremor, headache, loss in weight, nausea, pallor, coated tongue.										C	M	14 days.									
1	40	35	35	37	37	37	Red lead paster.....																									
1	14	14	14	14	17	14																										
1	77	30	28	60	25	50																										
1	12	14	14	14	14	14																										
1	3	3	3	3	3	3																										
1	17	18	19	20	19	9																										
1	7	6	6	7	6	6																										
1	1	1	1	2	2	2																										
Total.....																																
9	183	131	132	168	133	141																										
1	*	35	33	39	56	42	Solder machine feeder (female).....				Blue line.....										A	M	5 days.									
1	16	59	80				Soldrer.....				Blue line, wrist drop.....										A	S	60 days.									
																				Blue line.....										A	C	14 days.
																				do.....										A	M	14 days.
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TABLE NO. 3—Continued.

Disease and Industry.	Firms reporting.	Number of employees reported on.												Occupation of employee reported sick.	Diagnosis of employee reported sick.	Acute or chronic.	Mild or severe.	Probable duration.
		July.		August.		September.		October.		November.		December.						
		Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.					
Car seals and baggage— <i>Concluded.</i>	1	.....	250	.....	250	.....	157	.....	240	2	150	.....	180	Anaemia, abdominal tenderness, blue line, constipation, high tension pulse, headache, loss in weight, nausea, pallor, coated tongue, albuminuria..... Anaemia, abdominal tenderness, blue line, constipation, high tension pulse, headache, loss in weight, pallor, coated tongue, albuminuria.....	A	M	30 days.
						
Total.....	3	.....	269	.....	269	.....	206	.....	259	2	199	.....	199				
Telephone and switchboards:	1	.....	22	.....	22	.....	21	.....	19	.....	19	.....	19	Laborer..... Laborer.....	A	M	30 days.
	1	.....	17	.....	20	.....	20	.....	20	.....	15	.....	18				
Total.....	2	.....	39	.....	42	.....	41	.....	39	.....	34	.....	37				
Painting:	1	.....	11	.....	11	.....	11	.....	8	.....	8	.....	8	Wagon painter..... Wagon painter.....	C	M	60 days.
	1	.....	2	.....	2	.....	2	.....	2	.....	10	.....	8				
	1	.....	57	.....	74	.....	34	.....	29	.....	44	.....	29	Loss muscular strength, anaemia, abdominal tenderness, constipation, wrist drop, paralysis of muscles, tremor, high tension pulse loss in weight, pallor, coated tongue, albuminuria.....			
	1	.....	12	.....	12	.....	16	.....	17	.....	17	.....	8				
	1	.....	15	.....	14	.....	14	.....	14	.....	14	.....	14				
	1	.....	8	.....	8	.....	10	.....	10	.....	10	.....	10				
	1	.....	8	.....	8	.....	8	.....	8	.....	8	.....	5				
	1	.....	1	.....	1	.....	1	.....	1	.....	1	.....	1				
	1	20	25	24	19	16	22					
	1	*	*	*	*	*	3					
	1	20	1	20	20	20	20					
	1	10	5	5	5	5	5					
	1	592	610	488	567	480	475					
	1	10	5	5	5	5	5					

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TABLE NO. 3—Continued.

Disease and industry.	Firms reporting.	Number of employees reported on.												Diagnosis of employee reported sick.	Occupation of employee reported sick.	Acute or chronic.	Mild or severe.	Probable duration.
		July.		August.		September.		October.		November.		December.						
		Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.					
Wall paper, oilcloth and etc.	1 1 1	1 16 4	2 15 4	1 15 4	2 15 5	1 15 5	2 15 5	2 14 *	2 15 *	2 14 *	2 13 5	2 13 5	2 13 5					
Total....	3	22	21	21	22	22	22	16	16	16	20	20	20					
Enameling:	1 1 1 1	180 108 5 40	173 117 5 40	167 120 5 39	167 120 5 39	167 120 5 39	167 120 5 39	174 130 4 40	174 130 4 40	174 130 4 40	174 130 4 40	174 130 4 40	174 130 4 40					
Total....	4	333	334	331	331	331	331	346	346	346	341	341	341					
Grand total "A".	132	37	6,203	16	6,074	15	5,801	13	5,216	17	5,593	24	5,761					
"B" Other Poisonings—Arsenic, Paris green:	1 1	38 15	36 15	36 12	36 12	36 12	36 12	38 15	38 15	38 15	36 16	36 16	36 16					
Total....	2	53	51	48	48	48	48	53	53	53	52	52	52					
(a) Brass foundries:	1 1 1 1 1 1 1 1	11 7 23 7 152 19 5 17	12 6 21 7 157 19 4 18	9 6 19 2 152 19 4 16	9 6 19 2 152 19 4 16	9 6 19 2 152 19 4 16	9 6 19 2 152 19 4 16	12 4 22 * 151 6 4 20	12 4 22 * 151 6 4 20	12 4 22 * 151 6 4 20	9 2 23 * 146 13 4 6 17	9 2 23 * 146 13 4 6 17	9 2 23 * 146 13 4 6 17					

[illegible]

TABLE NO. 3—Concluded.

Disease and Industry.	Firms reporting.	Number of employees reported on.												Occupation of employee reported sick.	Diagnosis of employee reported sick.	Acute or chronic.	Mild or severe.	Probable duration.
		July.		August.		September.		October.		November.		December.						
		Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.					
(a) Brass foundries— <i>Concluded.</i>	1	...	21	...	21	...	21	...	19	18	Plater..... Ulcerations..... <			

Ulcerations..... A M 14 days.

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1	1	10	9	10	11	10	10	407	do.	Haemoglobin 70 per cent. Granular degeneration of red cells moderate.	A	M	Indefinite.
1	1	32	35	35	35	35	35		Laborer.	Colic.	C	M	Indefinite.
1	1	64	62	58	72	70	72		Blast furnace.	do.	A	M	10 days.
1	1	12	15	20	20	20	20		do.	Anaemia, loss in weight.	C	M	Indefinite.
1	1	9	8	9	11	15	15		Open hearth furn.	Abdominal tenderness, colic, constipation, nausea.	A	M	5 days.
1	1	65	65	100	120	200	200						
1	1	33	35	67	42	36	42		Foreman.		A	S	Indefinite.
1	*	203	198	203	182	194	194						
1	1	96	96	92	96	281	272		Ore crusher.	Loss muscular strength, anaemia, colic, blue line, constipation, slow pulse, pallor, coated tongue.	A	M	14 days.
1	1	239	270	276	279				Zinc oxide.	Loss muscular strength, anaemia, abdominal tenderness, colic, constipation, slow pulse, pallor, coated tongue, stippling of red blood cells.	A	M	14 days.
1	1	512	531						Gas, motor tender.	Loss muscular strength, colic, constipation, slow pulse, pallor, coated tongue, stippling of red blood cells.	A	M	14 days.
						1	530		Zinc smelter.	Colic, blue line, constipation, anaesthesia of fingers.	A	M	Indefinite.
1	1	175	144	126	135	153	160		Laborer.	Anaemia, colic, blue line constipation, high tension pulse, pallor, coated tongue.	A	M	30 days.
1	*	21	26	29	29	31	24		Charger.	Colic, constipation, slow pulse, headache, nausea, pallor, coated tongue.	A	S	10 days.
1	1	3	3	3	2	3	4		Helper.	Colic, blue line, slow pulse, headache, nausea, pallor, emetications.	A	M	5 days.
1	1	*	*	*	*	*	*		do.	Colic, blue line, slow pulse, nausea, coated tongue.	A	S	10 days.
1	7	330	*	*	*	*	*		Charger.	Colic, blue line, slow pulse, nausea, coated tongue.	A	M	6 days.
									Helper.	Colic, blue line, constipation, headache, nausea, coated tongue.	A	S	10 days.
									Charger.	Colic, blue line, headache, nausea, coated tongue.	A	M	5 days.
									Helper.	Colic, constipation, slow pulse, nausea, pallor, coated tongue.	A	M	5 days.
									do.	Colic, constipation, slow pulse, nausea, pallor, coated tongue.	A	S	14 days.

TABLE NO. 4—Continued.

Industry.	Number of firms reporting.	Number of employees reported on.												Occupation of employee reported sick.	Diagnosis of employee reported sick.	Acute or chronic.	Mild or severe.	Probable duration.
		January.		February.		March.		April.		May.		June.						
		Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.					
Smelting and refining— <i>Concluded.</i>	Charger.....	Colic, slow pulse, nausea, pallor, coated tongue	A	M	6 days.
	Helper.....	Colic, constipation, arthritis, headache, nausea, coated tongue.....	A	M	5 days.
	Laborer.....	Colic, constipation, slow pulse, headache, nausea, pallor, coated tongue.....	A	M	8 days.
	Charger.....	Colic, constipation.....	A	M	5 days.
	do.....	Colic, constipation, slow pulse, nausea.....	A	M	5 days.
	do.....	Colic, constipation, slow pulse, loss in weight, nausea, pallor, coated tongue.....	A	S	14 days.
	do.....	Colic, constipation, slow pulse, nausea, pallor, coated tongue.....	A	S	14 days.
	Laborer.....	do.....	A	S	14 days.
	Tapper white lead.....	do.....	A	S	14 days.
	Charger.....	do.....	A	M	5 days.
	Lead smelter.....	do.....	A	M	6 days.
	do.....	do.....	A	S	14 days.
	do.....	do.....	A	M	7 days.
	do.....	do.....	A	S	14 days.
Total.....	29	12	2,390	17	2,711	5	2,577	5	2,721	5	2,548	5	2,854					
Paint manufacturing:					
					
					
					
					
					
					
					
					
					
					
					
					
					

[illegible]

TABLE NO. 4—Continued.

Industry.	Number of firms reporting.	Number of employees reported on.												Occupation of employee reported sick.	Diagnosis of employee reported sick.	Acute or chronic.	Mild or severe.	Probable duration.
		January.		February.		March.		April.		May.		June.						
		Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.					
Car seals and bearing:	1	130	2	128														
	1	12	14	20	17	17	17	17	17	17	17	17	17	17	17	17	17	17
	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	1	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Total.....	4	149	2	149	157	1	198	1	198	26	1	193	1	174				
Telephones and switchboards:	1	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	1	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
Total.....	2	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
Painting:	1	8	12	15	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	1	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	1	24	27	28	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	1	1	14	14	16	16	16	16	16	16	16	16	16	16	16	16	16	16
	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	1	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	1	9	3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	1	118	107	122	119	119	119	119	119	119	119	119	119	119	119	119	119	119
	1			1														
					2					2								

Anaemia, colic, blue line, constipation, high tension pulse, pallor.
 Anaemia, colic, blue line, constipation, nausea, pallor.
 Anaemia, blue line, constipation, high tension pulse, pallor and etc.
 Loss muscular strength, anaemia, colic, blue line, constipation, high tension pulse, pallor, coated tongue.
 Moulder helper.
 Laborer.
 Furnace tender.
 ..do.
 Painter.
 Car liner.
 ..do.
 Stencil washer.
 ..do.

[illegible]

"B" Other Poisons— Arsenic, (Paris Green):																			
1	42	43	44	52	62	63	Paris green.....	Abdominal tenderness, dyspepia.....	A	M	Indefinite.								
2	14	16	1	74	23	13													
Total.....										81									
(a) Brass founders:										167									
1	140	144	108	139	159	107	Japanner.....	Dermatitis.....	A	M	Indefinite.								
1	10	*	7	7	7	7													
1	42	41	43	46	45	45													
1	78	79	84	83	91	96													
1	16	17	17	16	17	21													
1	16	17	18	18	17	17													
1	7	5	5	5	5	5													
1	20	20	15	17	20	20													
1	20	20	20	20	20	20													
1	56	55	57	55	57	56													
1	*	3	7	7	7	4													
1	163	*	161	161	166	165													
1	17	18	19	19	18	18													
1	*	*	11	11	10	10													
1	7	7	6	6	7	9													
1	1	10	10	10	10	10	Foreman.....	Presence of sugar, albumin casts and blood in urine.....	C	S	Indefinite.								
1	131	147	122	121	117	120													
1	18	*	*	*	*	*													
1	3	3	3	4	4	4													
1	15	14	10	12	9	14													
1	15	14	13	14	14	13													
1	181	163	160	159	112	155													
1	44	43	45	45	45	46													
1	66	69	71	80	86	86													
1	20	20	17	17	17	17													
1	5	2	2	*	*	*													
1	10	14	14	14	14	14													
1	4	4	4	4	4	4													
1	6	6	6	4	6	6													
1	70	63	73	71	70	60													
1	9	9	3	9	4	8													
1	19	8	8	9	10	9													
1	6	6	7	6	6	6													
1	8	8	8	8	8	8													
1	6	6	6	6	6	6													
1	2	2	5	5	*	5													
1	59	61	67	68	70	68													
1	15	15	15	15	15	15													
1	22	23	23	22	22	20													

TABLE NO. 4—Continued.

Industry.	Number of firms reporting.	Number of employees reported on.												Occupation of employee reported sick.	Diagnosis of employee reported sick.	Acute or chronic.	Mild or severe.	Probable duration.
		January.		February.		March.		April.		May.		June.						
		Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.					
(a) Brass foundries— <i>Continued.</i>	1	9	14	15	9	11	11	11	6	11	10	6	103					
	1	4	6	6	6	6	6	6	6	6	6	6	6					
	1	108	108	112	111	111	111	111	162	162	103	103	103					
	1	7	6	6	9	9	9	9	9	9	6	6	6					
	1	6	4	4	4	4	4	4	4	4	4	4	4					
	1	21	27	34	27	27	27	27	31	31	31	31	31					
	1	1	1	1	1	1	1	1	1	1	1	1	1					
	1	4	4	4	4	4	4	4	4	4	4	4	4					
	1	50	59	74	74	74	74	74	76	76	79	79	79					
	1	16	17	17	15	15	15	15	17	17	17	17	17					
	1	6	5	6	6	6	6	6	6	6	6	6	6					
	1	3	3	6	5	5	5	5	6	6	6	6	6					
	1	7	12	9	12	12	12	12	9	9	10	10	10					
	1	146	151	172	236	236	236	236	277	277	288	288	288					
	1	1	1	1	1	1	1	1	22	22	24	24	24					
	1	23	21	21	21	21	21	21	8	8	8	8	8					
	1	13	11	12	9	9	9	9	12	12	12	12	12					
	1	1	4	1	1	1	1	1	1	1	1	1	1					
Total.....	58	2	1,762	1,829	1,868	1,948	1,948	1,964	1	1,948	1,964	1,964	1,964					
(b) Spinners, burlers, polishers:	1	1	1	1	1	1	1	1	1	1	1	1	1					
	1	10	10	10	10	10	10	10	12	12	12	12	12					
	1	11	9	12	9	9	9	9	11	11	11	11	11					
	1	1	1	1	1	1	1	1	1	1	1	1	1					
	1	102	92	88	81	81	81	81	117	117	116	116	116					
	1	1	9	8	8	8	8	8	9	9	9	9	9					
	1	53	52	50	47	47	47	47	6	6	6	6	6					
	1	12	7	6	6	6	6	6	35	35	35	35	35					
	1	12	21	35	35	35	35	35	25	25	20	20	20					
	1	1	24	21	26	26	26	26	7	7	7	7	7					
	1	1	7	7	7	7	7	7	1	1	1	1	1					

Colic, blue line, constipation.....

Melter.....

A

M

10 days.

TABLE NO. 4—Concluded.

Industry.	Number of firms reporting.	Number of employees reported on.												Diagnosis of employee reported sick.	Occupation of employee reported sick.	Acute or chronic.	Mild or severe.	Probable duration.
		January.		February.		March.		April.		May.		June.						
		Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.					
Decalcomania:	1	....	10	....	9	....	7	....	10	....	7	....	6					
Total.....	1	....	10	....	9	....	7	....	10	....	7	....	6					
Galvanizing:	1	....	5	....	16	....	6	....	6	....	5	....	4					
	1	....	9	....	9	....	10	....	10	....	*	....	10					
	1	....	20	....	20	....	21	....	20	....	20	....	24					
Total.....	3	....	34	....	45	....	37	....	36	....	25	....	38					
Total "B".	116	2	2,738	....	2,550	1	2,833	....	2,856	1	2,989	1	2,888					
Grand total....	257	16	8,299	21	7,993	8	8,500	12	8,424	10	8,370	12	8,979					

THE EARLY DIAGNOSIS OF LEAD POISONING.

The Occupational Disease Law of Illinois has been in operation since 1912. During the last year 257 firms have employed physicians to examine their employees for lead poisoning. We note that when a factory employs a physician for this purpose, he usually remains at his post. Big business concerns do not care to change help of this type and generally engage the best available talent. The factory physician upon beginning his duties usually familiarizes himself with the subject of occupational disease and rapidly becomes proficient in his work.

The physician makes a monthly report of the results of his examinations in the factory under his charge to the Illinois State Board of Health and such report is forwarded to this department. Thus we feel fairly confident in saying that the last three years has developed a group of physicians who are competent to diagnose, not only a well marked case, but who are also able to discern the early symptoms and signs. Should any physician observe a case and not report such, he is doing his firm an injustice, since if such a case should sue the firm, and the case has never been reported, it can clearly be seen that this department cannot testify to a compliance with the Occupational Disease Law.

Thus we desire to present accompanying Table No. 5 and discuss the relative importance of symptoms and signs of industrial lead poisoning. The appended table and figures show a list of findings reported by various physicians in 1914-1915, which we consider fairly reliable, because of the above mentioned gain in experience by physicians from previous years' work, and also because they coincide with the experience of the physicians of the Illinois Department of Factory Inspection.

About a year and a half ago the department issued on their report blanks a list of symptoms and signs to be checked off, should they be found in the course of medical examination. The Medical Department does not hold that all are the possible findings in all lead cases, but considers merely that the list would be a great aid to the physician in keeping a record of his examination, and also that it would furnish for the Medical Department data in regard to lead poisoning.

The greatest benefit to a patient with pulmonary tuberculosis is that the diagnosis be made in its incipency, and the same must be said of lead. With due respect to our writers on internal medicine, medical books and our teachers of internal medicine, it is lamentable that physicians have been taught that lead poisoning is: blue line, colic, constipation and lead encephalopathy. We have seen just as many severe cases of lead poisoning without blue line as with it, and one case reached the stage of lead convulsions and coma without colic or any other disturbance being observed.

Accompanying table gives the relative occurrence of symptoms and signs of lead poisoning. We dare say, that the greatest number of cases reported are early cases.

It will be noted that constipation was reported 84 times, anemia 82, colic 82, pallor 77, coated tongue 77, slow pulse 54, nausea 55, blue line 50, loss of muscular strength 27 and abdominal tenderness in 23 cases.

Most important of these are anaemia with 82 cases and pallor with 77. We note that some physicians report pallor only, while others report anaemia only. The terms are confusing and we must conclude that the

average physician judged this sign by the appearance of the nails and conjunctiva. Adding both together we would have 159 cases with anaemia and pallor. It would be scientifically interesting, if we could get a Tallquist haemoglobin test in each case, but this would be impossible under present conditions. Let it suffice to say, that pallor or anaemia seems to be not only one of the most constant signs, but also one of the most early phenomena of plumbism. The Medical Department advises that a diagnosis of lead poisoning should be tentatively made in any lead worker who develops an anaemia. By removing the worker from the lead he is given the best chance for future good health. Should further examination reveal another condition than lead, such as phthisis or nephritis, no harm has been done in regarding the condition as plumbism, until proved otherwise. We also desire to mention here that anaemia is present not only as an early sign in the acute case, but is the one sign that is cardinal in slow progressive lead intoxication, where other symptoms and signs such as colic and blue line never appear.

The next most important early sign is constipation, which is often rapidly followed by vague gastric distress, abdominal tenderness and colic. It is often difficult to interpret this symptom. Many lead workers are foreigners, unable to understand, and sometimes ashamed to tell the truth. Although constipation is an important symptom, we can place it as secondary to anaemia or pallor, but the two plus colic make the most important triad of findings of an early case of plumbism.

We need not discuss but one of the other common findings, and that is loss of muscular strength. Although this symptom is only reported in 27 cases out of the total, we dare say that more careful observation should be made by physicians as to whether this condition is not more prevalent in early lead poisoning. We find that by using the hand dynamometer that the grip is very weak in all cases of lead poisoning, even where this sign has not even been noticed by the patient; when possible it is recommended that physicians make monthly records with a hand dynameter. We really believe that such will prove out the statement that loss of muscular strength is an early sign and occurs in a far greater number of cases than that reported to the Illinois State Board of Health.

In conclusion we wish to state that the cardinal symptoms and signs of lead poisoning are anaemia, constipation, abdominal tenderness and loss of muscular strength.

TABLE NO. 5—OCCUPATIONAL DISEASE.

Frequency of symptoms reported for the year July 1, 1914, to June 30, 1915.

[illegible]

Table No. 6 presents the number of firms reporting on occupational disease shortly after the law became effective. The table covers a period of nine months from July 1, 1912, to March 31, 1913. At that time a total of 90 firms were reporting, whereas that number has now increased to 257. This table follows the same classification of poisonings and industries as employed in Tables Nos. 3 and 4. With the publication of this table the department has a complete printed record of all the reports received in compliance with the Occupational Disease Law to date, showing every sick case reported, his occupation and signs or symptoms.

TABLE NO. 6—OCCUPATIONAL DISEASE REPORTS ACCORDING TO SECTION 4 OF THE OCCUPATIONAL DISEASE LAW SHOWING TOTALS FOR INDUSTRIES SINCE BEGINNING OF REPORTING SINCE TAKING EFFECT OF LAW.

Summary for nine months' period—July 1, 1912, to March 31, 1913.

Industry and disease.	Number of firms reporting.	Number of employees reported on for—											
		July.		August.		September.		October.		November.		December.	
		Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.	Sick.	Well.
"A" Lead Poisoning—													
White lead.....	4	3	21	1	107	21	30	4	200	3	349	3	201
Smelting and refining.....	8	8	949	16	692	1	1,050	18	1,066	18	1,341	13	1,106
Manufacturing of paints.....	12	1	108	1	30	1	113	1	125	1	125	1	127
Batteries.....	3	1	310	1	32	1	40	1	38	1	47	1	43
Painting.....	8	1	374	1	225	*	96	1	308	1	207	1	436
Wall paper.....	1	*	290	*	258	*	230	*	209	*	210	*	208
Enameling.....	2												
Total, Class "A".....	40	12	1,716	19	1,424	22	1,559	22	2,056	21	2,101	16	2,119
"B" Other Poisonings—													
Arsenic, antiparasitides.....	2	*	16	1	12	*	12	3	13	*	166	*	16
Phosphorus.....	1	*	*	*	*	*	136	*	165	*	156	*	168
Brass.....	28		739		1,128		210		1,092		1,729		1,350
(3) Founders.....	16	1	248	*	340	*	84	*	286	*	216	*	462
(b) Spinners, buffers and polishers.....	2	1	14	*	11	*	9	*	3	*	5	*	3
Plating.....	1	3	14	2	11	*	9	*	*	2	8	*	*
Decalcomania.....	1												
Total, Class "B".....	50	4	1,025	3	1,541	22	2,010	25	3,618	2	2,280	16	4,118
Grand total.....	90	16	2,739	22	2,965	22	2,010	25	3,618	23	4,381	16	4,118

[illegible]

[illegible]

[illegible]

The following tabulation, prepared by Dr. C. St. Clair Drake, Secretary of the Illinois State Board of Health, and by reason of his kindness made available for this publication, shows the deaths from chronic lead poisoning and other chronic occupational poisonings reported to the State Board of Health during the year 1914:

TABLE NO. 8—DEATHS REPORTED BY COUNTIES.

For year ending December 31, 1914

County.	Chronic lead poisoning.		Other chronic occupational poisoning.	
	Males.	Females.	Males.	Females.
Adams.....			1	
Cook.....	4	1	1	1
Crawford.....			1	
Madison.....	1			
Rock Island.....	1			
St. Clair.....	1			
Tazewell.....	1			

DEATHS REPORTED BY SEX, COLOR, NATIVITY AND SOCIAL CONDITION.

For year ending December 31, 1914.

Cause of death.	Sex.		Race.		Nativity.			Conjugal condition.		
	Male.	Female.	White.	Black.	Illinois.	United States.	Foreign.	Single.	Married.	Widowed.
Chronic lead poisoning.....	8	1	8	1	3	3	3	5	4	.....
Other chronic occupational poisonings.....	2	2	4	.....	1	1	2	2	.....	2

DEATHS REPORTED BY AGES.

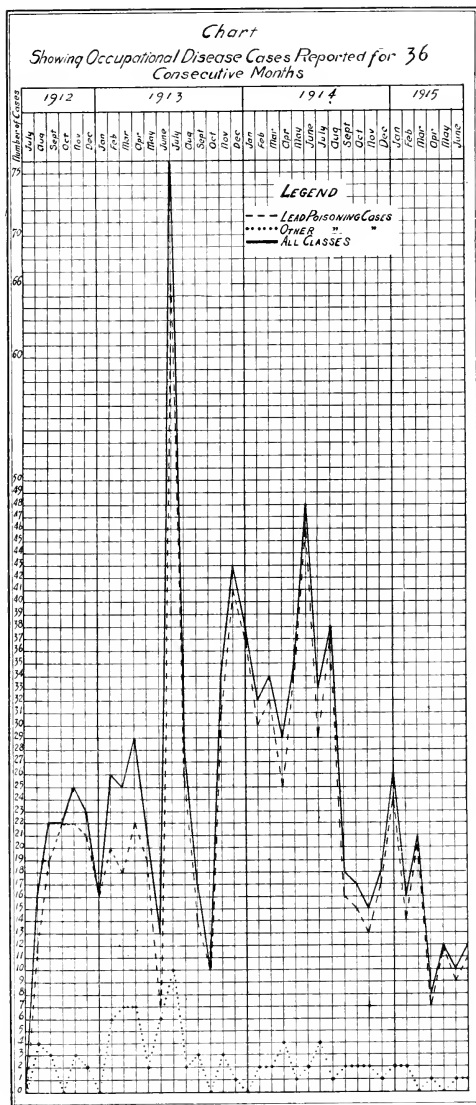
For year ending December 31, 1914.

Causes of death.	Ages.						
	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	
Chronic lead poisoning.....	1	3	2	2	1	.....	1
Other chronic occupational poisonings.....	2	.....	.....	1	.....	.....	.....

DEATHS REPORTED BY MONTHS.

For year ending December 31, 1914.

Causes of death.	Month.							
	February.	March.	April.	May.	July.	August.	September.	October.
Chronic lead poisoning.....	2	1	1	1	1	.....	1	2
Other chronic occupational poisonings.....	1	.....	.....	.....	.....	1	1	1



THE CHART.

Accompanying chart gives a graphic representation of occupational disease cases reported to this department from July 1, 1912, to June 30, 1915.

Three lines can be followed, one dotted, one made with dashes, the other a continuous black line. The dotted line represents diseases or conditions due to arsenic, brass, aniline, decalcomania, wood-alcohol, and from materials employed in plating, electro-plating and galvanizing. The line with broad dashes includes those trades in which lead is the cause of disease. These are white-lead manufacturers, print shops, smelting and refining, storage battery concerns, manufacturers of tin-ware, car seals, ball-bearing metal, telephones, switchboards, wall paper, oilcloth, and also such trades as wagon and auto painters, enameling and electrotyping. The continuous black line represents the sum total of all occupational diseases reported.

The greatest incidence of lead poisoning and of the sum total of disease reported will be noted in 1913 and up to July, 1914. Previous to 1913 the largest number reported was 29 in the month of March. Since July 1, 1914, there has been a gradual decrease of reported cases of occupational diseases.

The law went into operation July 1, 1912, and it took fully one to one and a half years to bring the different hazardous trades under the jurisdiction of the Factory Inspection Department. The majority of industries, which are at present reporting to this department, were caused to do so from July 1, 1912, to January 1, 1914. This accounts for the difference in the occurrence of occupational disease in 1912 and in 1913 as noted by the chart.

Many firms were tardy in compliance, until reinspections were made. In other concerns the same cases were reported in 1913 from month to month until cured, although the disease had been caused before a compliance with recommended hygienic measures had been brought about. Thus we might say that the benefits derived from the enforcement of the law do not seem to appear until the middle of 1914 for the above mentioned reasons.

Now it will be noted that since July 1, 1914, there has been a decrease of all forms of reported cases of occupational disease, which we must attribute solely to the rigid enforcement of such health measures as prevent lead, arsenic and other forms of industrial disease.

The argument might here be raised that factories are not in operation and that the number of employees in any one factory is much less than in previous years. We investigated this question by picking out at random some of the large concerns. We found a slight decrease in employees in some, but not enough to influence interpretation of the chart. In one large paint manufactory there were in 1913-1914 one hundred and twenty employees per month, with five reported cases of disease for the year. In 1914-1915 there were one hundred and seven employees per month, with one case reported for the year. In another large paint shop two cases were reported in 1913-1914 from an average of five hundred and forty-one employees per month, whereas in 1914-1915 there were no cases although the average number of men working per month was four hundred and ninety. In one large ball-bearing

metal concern, as many men were employed in 1914-1915 as in the previous year, with 28 cases last year, and only 6 this year. In a smelter of lead there were fewer men employed last year than this, although the number of cases was 3 in 1913-1914, there were none in 1914-1915. This same smelter reported 56 cases in 1912-1913, and was one of the first concerns caused to comply with the law.

This chart when compiled was very encouraging to the Chief Inspector and to the medical department, since it showed the fruit of much work. It is highly gratifying to know that with proper hygienic measures applied as mentioned in the law and enforced and advocated by this department, workingmen can be saved from disease, often fatal, and it shows that the law is both humanitarian, as well as economic in its results.

ACETYLENE.

Acetylene gas, which up to recent years had merely been a chemical curiosity, was put to commercial use by Willsons. He and his collaborators manufactured calcium carbide by means of an electric furnace. Since then this gas has been used extensively for illuminating purposes; especially in rural districts. Of late, acetylene is being adopted as the most desirable agent in welding metals.

During the past year chills and other untoward symptoms were reported from one factory where much oxyacetylene welding is being done. Upon investigation it was found that above distress occurred only when zinc was being welded and the windows were closed. We decided that the poisonous agent must be zinc fumes, acetylene gas or the by-products of this gas.

Before going further it is necessary to state, that acetylene is a gas, with a pleasant odor, and it is highly combustible, and much argument has existed for some time as to its physiological action. We quote from Haines and Peterson that "no deleterious action has been noticed of this gas upon the body and that it behaves indifferently on the red blood corpuscle."

Upon investigation we found that no deleterious results occurred in the oxyacetylene factory, when iron was used and not zinc.

Six guinea pigs placed in the densest atmosphere (1) in acetylene diluted with air, (2) in the factory where welding was being done, produced no clinical or pathological changes.

We desire to conclude that acetylene is a nonpoisonous gas as used in industries.

COAL TAR ANILINES.

The dearth of aniline products in our American markets, owing to the present war in Europe, has acted as a powerful stimulus to our own larger paint manufacturers toward the production of their own aniline products. Heretofore, this industry has been carried on almost entirely in Germany. We have at present one large plant in this State where paints and dry colors are manufactured where the distillation of coal tar and pitch has been started. While at present this industry in our State must be looked upon as experimental, it probably presages the beginning of a new industry of exceptional interest to the student of occupational disease. Employees engaged in handling or grinding large quantities of pitch are subject to a skin eruption peculiar to this industry,

large amounts of dust being given off during the grinding of the dry pitch. These men are subject to various digestive disorders, bronchitis and nasal ulcerations. It has long been known that there existed an intimate relation between the skin ulcerations common to pitch workers and cancer, cases having been under observation during a period of years showing in many instances the development of a true skin cancer. In England the so-called chimney sweeps' cancer has long been known and has been recommended as a subject for compensation by the Departmental Committee on Compensation for Industrial Diseases in that country.

ELECTROTYPERS.

There are in Cook County 34 electrotyping shops, including newspapers and one large mail-order house. The greatest number of these are located within or close to the loop district in Chicago. During the month of December and January these shops were visited by the medical inspector.

The average number of men and boys working in a shop is about 25; only 1 to 2 men work at the casting pot.

The nature of the work demands close proximity to the loop or business-district; for this reason, many of the shops are in close quarters. In 5 establishments the ventilation was below standard and in 9 establishments exceptionally good. Four concerns had artificial ventilating systems.

The metal used in this industry contains about 85 per cent lead. The alloy is melted in a kettle, usually by the means of wood, coal or coke heat, and then poured into the moulds. This is the greatest hazard of the trade. One to two men are exposed at this process in each shop. The metal, however, is not heated above 600° F. and it is questionable whether the worker actually inhales fumes of lead. It is more likely that he exposes himself to the lead oxide which is found about the kettles.

Lead poisoning is a very rare occurrence among electrotypers, being three to four times less frequent than among compositors or type setters. The medical inspectors have seen several cases in former years, but have not been able to discover any plumbism in the past year, perhaps for the following reasons:

1. The electrotype worker is intelligent and has taken advantage of the fact that ordinary care, such as washing, care in eating, discontinuance of chewing tobacco, and the observance of general hygiene will prevent lead poisoning.

2. In 34 shops 68 are exposed.

3. The employers, being aware of the State's efforts to prevent lead poisoning and realizing other advantages to themselves in the situation, have cooperated with their men in preventative means.

Following the investigation of 34 shops, the Department of Factory Inspection deferred action as to whether these places come under the scope of the Occupational Disease Law for further observation and investigation.

INDUSTRIAL CARBON MONOXIDE POISONING FROM THE GAS EMITTED BY THE EXHAUST PIPES OF GASOLINE ENGINES.

It is not necessary in this article to go into details concerning the symptoms and signs of carbon monoxide poisoning. We refer the reader

to previous bulletins where we have mentioned that: (1) acute and chronic intoxication occurs with this gas, that the acute is manifested by a train of severe symptoms such as vertigo, coma, severe headache, and by the characteristic carbon monoxide blood picture; and that the chronic form reveals itself in headaches, pallor, and an actual polycythemia; (2) that many individuals are not harmed by small constant doses of this gas, because there is a compensatory polycythemia.

In previous bulletins we referred to the different industries in which CO poisoning occurred, those being principally mentioned were illuminating gas, steel, coke, by-products industries and those concerns which use producer gas.

Since the introduction of the automobile and gasoline launch, it has been reported in the daily papers and by hearsay that many persons become ill from the fumes of gasoline motors. Such occurrences are reported mostly as happening in garages. While writing this article we received a press clipping of such an accident at Belvidere, Illinois. The clipping reads: "E. H., who is employed by F. P. at his garage on Menominee Street, was overcome by the fumes from an auto motor running in a closed room and but for the timely assistance of F. P., the consequences might have been serious." Such reports have caused the medical department to investigate the cause of the accidents and the nature of the fumes.

Moreover, if such accidents do occur, it has been deemed worthy of an investigation, since the use of the gasoline engine is increasing in factories and on farms, also as a mode of locomotion.

Analyses were made of the gas collected from Ford, Buick and Overland cars. The experiment was performed by Joseph N. Schumacher, chemist of the city of Chicago, and by Dr. George L. Apfelbach of this department. Fourteen tests were made in the following manner: An ordinary sampler, such as is used in gas analysis, was attached by means of glass and rubber tubing to the exhaust pipe of each automobile. When the pet cocks of the sampler were opened the gas entered, as the water ran out. Having obtained a sampler full of gas, it was attached to a bunette for analysis.

(1) The $C O_2$ was removed by washing gas with a 10 per cent $K O H$ solution. Reading was made.

(2) Bromine was used to determine the illuminants present.

(3) Pyrogallie acid removed oxygen.

(4) $Ca O_2$ added, which caught $C O$.

The average of the 14 analyses so made was:

$C O_2$ — 6.7 per cent.

$C O$ — 9.3 per cent.

O_2 — 1.4 per cent.

Illuminants 0.3 per cent.

Nitrogen 82.2 per cent.

H— 0.0

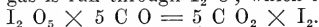
The result was surprising. It showed us that gas from motor exhausts contained 9.3 per cent of carbon monoxide, which is nearly as much as the $C O$ content in coal gas, which is 10 per cent. Any atmosphere containing 5 per cent of this gas will produce symptoms 1 per cent fatalities, and 9.3 per cent rapid death.

There is no other toxic gas in above analysis, except perhaps the illuminants, and these register only 0.3 per cent. The exhaust gas is rapidly diffused on the street or in the opening. Nevertheless, we occasionally hear of cases of mild nausea and headache having occurred in crowded downtown districts in the large cities on rainy days. The condition, however, becomes quite serious, if the motor is allowed to run in a closed garage.

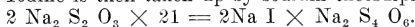
Further investigation was made by interviewing chauffeurs of five taxicab companies in Chicago and by obtaining information first hand from a physician who spends one hour every day in the main garage of such a concern. The medical man stated that "He frequently hears the mechanic and chauffeurs complain of vertigo, headache and nausea, especially in the winter months or on rainy days."

We obtained various samples, but the results were negative, since our bunette was difficult to read when the gas was present in quantities of 1 per cent or less. By using the Iodine Pantoxide test we obtained traces of C O in every garage tested.

The gas is run through $I_2 O_5$; which liberates Iodine.



The Iodine is then taken up by sodium theosulphate solution.



This operation is performed in an oil bath at $300^\circ F$. If no C O is present, no I is present. For further information as to this method of testing an atmosphere for the presence of C O we refer the reader to the Medical Department.

Following are the conclusions from the above mentioned investigation:

(1) The exhaust of automobiles contains a very toxic gas, a C O content over 9 per cent.

(2) Since the gas is so toxic, the public, employers and employees should be warned. No motor should be allowed to run in any garage, unless the ventilation be extraordinarily good. *To go alone into any garage, where a gasoline motor is running entirely incompatible with the present day slogan of "safety first."*

(3) The Chief Inspector has instructed all deputy inspectors to prohibit the emptying into any workshop of any stationary gasoline engine exhaust. The "Health, Safety and Comfort Law" provides for this provision.

CONSERVATION OF THE EYE.

Investigation was made by interviewing some of the leading eye specialists of Chicago and also by reviewing the histories of eye accidents and operations at the Cook County Hospital.

From an industrial standpoint the eye is subject to the following conditions: (1) To accidents from foreign bodies in the eye, including various kinds of puncture wounds, and also burns; (2) to injuries from light, heat and the actinic action of light rays; (3) to strain of the delicate musculature and the nervous tissue of the eye; (4) to toxic conditions arising industrially, of which the chief poisons are methyl alcohol and lead.

EYE ACCIDENTS.

Foreign bodies are liable to enter either the surface of the eye or even penetrate into the tissue in nearly all the dusty trades, and espe-

cially where metal is being ground and polished, or where wood working is being done. The general opinion of the laity is that most of such accidents are trivial, simply demanding the removal of the foreign body, but as a matter of fact the foreign body, especially if it be a bit of steel or emery, penetrates the conjunctiva, causes laceration, sometimes so deep as to injure cornea, iris, the lens, and even the vitreous humor, retina and other coats of the eye. The results of such serious accidents is that scar tissue forms at the point of entrance of such a bit of steel, sometimes obliterating the field of vision, sometime the formation of a destructive corneal ulcer, an infection of the entire eye. Laceration of the eye or the lodgement of a foreign body on the lens is often destructive to the sight, and if the injury is deeper, the eye is usually enucleated, that is taken out.

One eye specialist complained to the writer that his speciality was not as desirable as formerly for the young men entering new fields in medicine, since the number of eye operations was on the decrease. The reason was that most employers are awake to the fact that eye injuries can be prevented by the use of goggles and other safety measures. This statement was verified by other ophthalmologists and by the hospital records investigated.

The use of goggles is recommended by this department in all processes of manufacture where steel, brass, iron or metals are being polished on a grinding wheel, where stone is being cut or sawed, where metal is being melted and where wood planing is being done. Fortunately the "Blower Law" of this State has not only reduced the incidence of pulmonary tuberculosis, but has also decreased the number of eye injuries, and saved many an eye by reason of the mechanism applied to grinding wheels. The department has on exhibition two pair of goggles, one never used, the other having been worn for one week in a machine shop; the latter is covered with fine particles of steel so densely related that one can hardly see through the glass. The casual observer remarks that the worker's eye has been spared from much dirt; but the experienced ophthalmologist realizes that the employee has perhaps been spared an eye.

This brings us up to a pernicious practice found in many shops when a workingman gets something in his eye. In nearly every factory there is some fellow-workingman who can take small cinders out of the eye. The man with something in his eye goes to this "specialist" and the latter pulls out a sweaty handkerchief and wraps it around a match, introducing the sweaty handkerchief into the eye. He may remove the foreign body and he may not, but he certainly leaves nothing undone to infect a laceration, if such has occurred in the cornea, with his dirty, sweaty handkerchief. This is a careless, pernicious practice in factories and also among the public at large.

Every employee in this State has the right to demand medical attention for foreign bodies in the eye by reason of the "Compensation Law". Large corporations who pay their own compensations, realize the danger to the eyes from foreign bodies, and have such safety rules as to fire a workman who allows another employee to remove dirt or foreign bodies from the eye.

THE EFFECT OF LIGHT AND HEAT.

We have gone into some detail on this subject in an article on "Electrica Ophthalmia," published in our second bulletin. Added information causes us to remind employees throughout the State that the use of amber glasses or lead glasses shut out those rays of light, which cause the eye to smart at night or in the morning upon awakening.

EYE STRAIN.

In our modern civilization with such marked tendency to specialization we find certain occupations where a great demand is made on the eyes. We refer here to telephone operators, typists and stenographers, and numerous other occupations. We recommend that where such strain exists that the employee should, where possible, take an occasional 3 to 5 minute rest period, reclining in a chair, with complete relaxation, and with eyes closed.

TOXIC CONDITIONS.

Wood alcohol ambiopias are not common in the State. The writer has investigated the hospital records and communicated with ophthalmologists. We wish to report the occurrence, however, of two such cases from the inhalation of methyl alcohol fumes in a perfume manufactory.

THE QUESTION OF FUMES FROM AN OCCUPATIONAL DISEASE VIEWPOINT.

A survey of the occupational disease reports during the past year leads us to the conclusion, that the subject of poisonous fumes and vapors is of greater importance than any other factor with which this department has to deal, relative to the prevention of occupational disease.

In the subjoined list of chemicals no attempt has been made toward completeness; we have given merely those which, by reason of their commercial importance in the various trades, have been found to be of paramount importance to the student of industrial poisonings.

First in line is lead, by reason of the multiplicity of its uses in the various trades, such as smelting, refining, tinning, electrotyping, brass foundering, etc. Ethyl, amyl and methyl alcohol, aniline oil and its derivatives, benzine, turpentine, ammonia, antimony, arsenic, potassium, cyanide, hydrochloric acid, sulphuric and nitric acid, mercury and other chemicals in various combinations. Where we deal with non-volatile substances or poisonous materials, such as lead paint or a combination such as cyanide of potassium and water, the mixture of which causes no chemical decomposition, hence no fume, the problem of occupational disease prevention resolves itself largely into a question of personal hygiene and cleanliness of the workman, shop discipline, medical supervision and adequate washing facilities.

The question of fume prevention is much more complex and difficult of solution. Here the personal equation, and the overworked plea of alcoholism, poor housing, personal uncleanness have relatively minor roles. Our experience justifies us to make the statement that in no case, where any of the above chemicals are used, is natural means of ventilation sufficient, and just upon this point has it often been found most difficult to convince the manufacturer.

It is not within the scope of this article to lay down any principles of ventilation, as the methods will vary with the industry and its hazards. That the well-equipped foundry or refining plant should employ competent physicians for the frequent physical examination of its employees, provide adequate facilities for personal cleanliness, goes without saying. Too often we find a plant using one of the above named chemicals, depending on hoods equipped only with natural suction. The hood without an exhaust system is worse than useless, in that it gives the employee an entirely false sense of security. Too much cannot be said in commendation of mechanical fans. Here also the well-disposed manufacturer often has to combat the ancient superstition existing among the employees as to the dangers of pneumonia and colds from drafts. The writer has in mind a recent inspection of a stereotyping room of one of our large daily papers, where he found well-placed fans capable of adequate suction rendered useless, because the employees insisted on reducing the speed of the fans, fearing pneumonia. In many industries localized ventilation is desirable, even necessary. However, in the majority of plants we find two or three lead kettles or a nitric acid vat in the center of the floor of a foundry pouring room. Such a room might be considered first class in many other respects, but the fact that it exposes 50 workmen at one time to the fumes of nitric acid and lead oxides, when a correct placing of a set of partitions would expose only 5 or 6 men, must condemn its usefulness. No effort should be spared to prevent general diffusion of poisonous fumes.

Gases collected by the exhaust system are usually disposed of either by condensation or absorption through pipes surrounded by cold water or by discharging into a large condensing chamber the walls of which have been cooled. Where the disposal of the gases is accomplished by means of absorption, the fumes are conducted directly into chambers containing water or an absorbing fluid. It is frequently the case that the by-products thus obtained will more than reimburse the manufacturer for any pecuniary loss sustained by the installation of the apparatus. As an example of what may be accomplished by ventilation alone, we may cite our experience with a plant engaged in the production of babbitt metal and the various lead containing alloys. The average number of employees reported monthly during 1913-1914 showed 168 well and 28 sick. During this period the employees were entirely dependent upon natural means of ventilation, monitor roof, abundant windows and hoods over all kettles containing lead alloys. The reports from the same plant for the year 1914-1915 shows a monthly average of 184 well and 6 sick. This decided reduction in the hazard followed the installation of an exhaust system.

Our reports in America are as yet too meager and no conclusions can be based upon them. However, the German and British reports contain complete records and have been available for the past 20 years. From these reports we learn that each year there are reported hundreds of cases of industrial poisonings. In the various industries where lead is melted an adequate exhaust system over pots and kettles is imperative, if the hazard is to be reduced. Care must be taken to place the hood at an effective height over the kettle or melting pot, otherwise effectiveness of the hood will be materially lessened. If the kettles are located in a

general workroom they should be inclosed by walls, thereby placing them in a room by themselves. In the zinc industry the hazard from fumes is materially less, as many refining plants use an ore containing little or no lead. The existence of zinc poisoning per se is as yet open to question.

The fumes of nitric and other acids, if used in any concentration, require hoods with a forced exhaust.

Paints, varnishes and enamels give off fumes, particularly those paints and dryers containing benzine, naphtha and turpentine. In spaces devoid of ventilation, such as brewers' vats, tanks, etc., the fumes of paints and quick dryers are exceedingly toxic. The workmen employed in the manufacture of these paints have at least the protection of a ventilated workroom and washing facilities, but the journeyman painter nine times out of ten applies these paints and finishes in a room having no ventilation and under conditions where no facilities for personal cleanliness are provided. The percentage of such men receiving sick benefits from their organizations for fractures and injuries sustained by reason of falls is entirely out of proportion to the risk of working on a ladder or scaffolding. We know from personal investigation of a number of cases having fallen from ladders and scaffolding, that the men fell while suffering from an attack of vertigo or dizziness due to the effects of benzine, naphtha or turpentine in the dryer. Here the problem of prevention is most difficult, unless we compel the manufacturer to substitute the less toxic compounds.

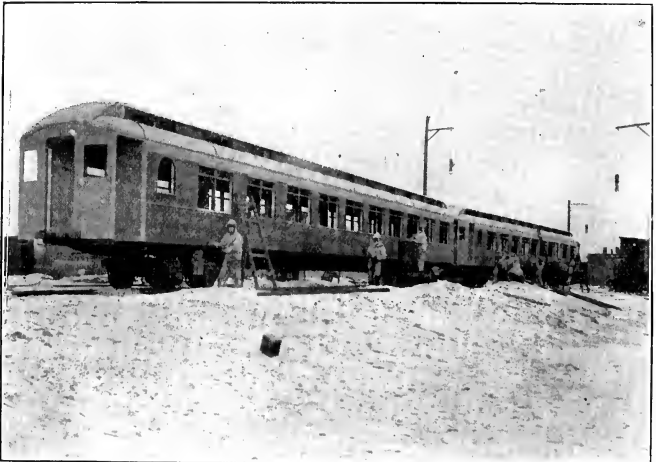


Illustration No. 47. Dry sanding of paint. Note protection to men, helmets, gloves and suits.

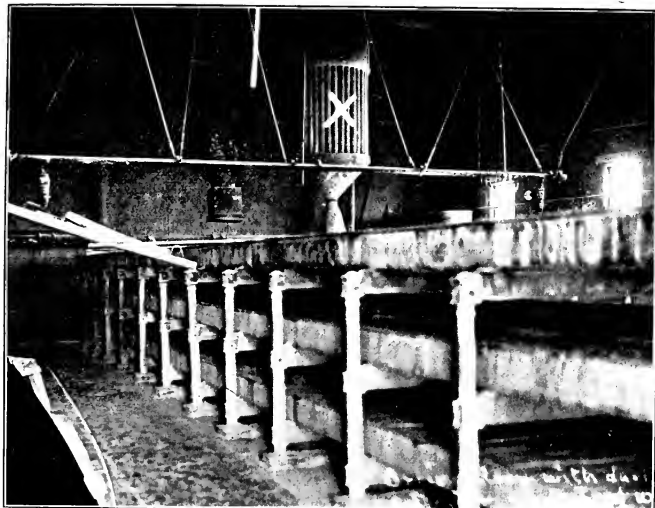


Illustration No. 48. Dust collector in white lead works.

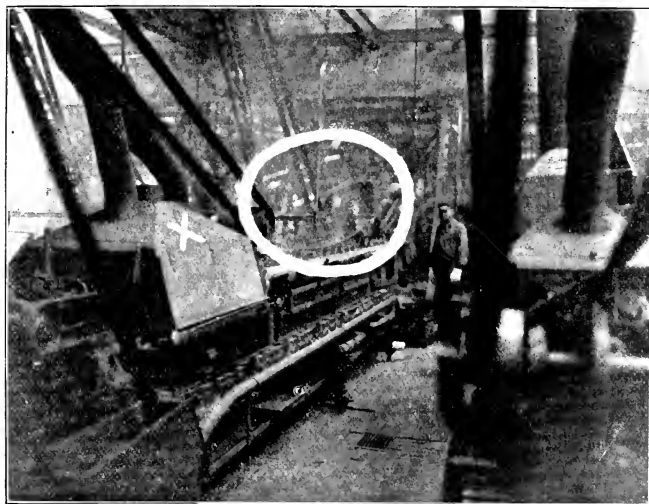


Illustration No. 49. Can soldering machine. Note lead fumes in circle. "X" denotes hood to carry off fumes, but did not relieve fumes in area indicated.

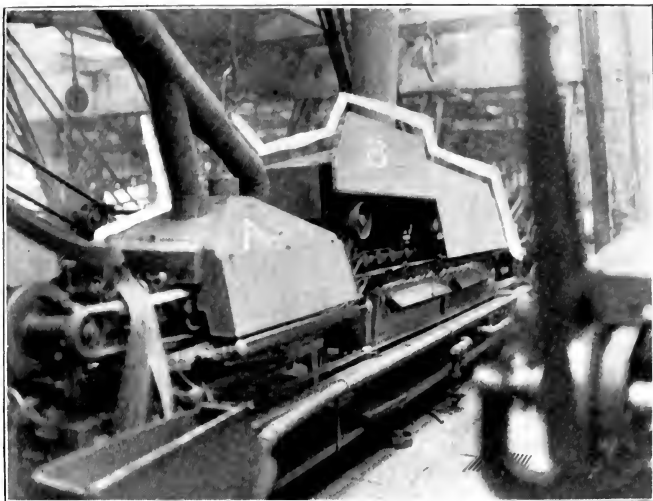


Illustration No. 50 Same can soldering machine shown in illustration No. 49, but with hood provided with exhaust device to carry off poisonous lead fumes. In the can industry many cases of lead poisoning were reported to this department before these hoods had been installed by order of this department.

RESULTS OF INSPECTIONS ACCORDING TO THE PROVISIONS OF THE WASH HOUSE LAW.

The enforcement of this law which has been in operation two years, is welcomed by employees with eagerness. Employers at first objected to the cost of installing washing facilities; also offered the excuse that if washing facilities were provided the men would not make use of them. However, employers have been convinced by their own employees that washing and cleansing are as essential in their make up as eating a square meal at least once a day. Although in many instances the employees are of foreign nationality and unaccustomed to the beneficial qualities of soap and water, they appear just as anxious to avail themselves of modern toilet facilities as their American fellow-workmen.

This law applies to coal mines, steel mills, foundries, machine shops and any other place of employment in which employees become covered with grease, smoke, dust, grime and perspiration. In any business just enumerated a sanitary washroom must be provided for the use of employees at a convenient place.

The reason for the passage of this law was due to the offensive condition of employees after leaving their shops. Without washing facilities they were compelled to mingle with the public on their way home covered with perspiration, grease and grime.

The opportunity to wash removes not only dirt and perspiration, but obviates all offensive odors, especially such as is caused by perspiration.

The law further demands that washrooms must be so arranged that employees may change their clothing and shall be of sufficient size to accommodate the number of men regularly engaged. Sanitary lockers for the purpose of storing street clothes during working hours are obligatory. Hot and cold running water must be furnished in sanitary troughs. The water must not be permitted to remain standing in the troughs, but must have an uninterrupted flow to the outlet pipe.

The use of bowls with plugs is prohibited; invariably when plugs are attached to basins or standpipes in troughs the workmen forget to remove the plug and the man to follow is compelled to clean the bowl or wash in water contaminated by the previous user of the bowl. When washing in a bowl where the water is retained by a plug a scum or crust forms at the edge of the water and sticks to the sides. This is very objectionable and entirely unsanitary. For this reason the department advises the installation of troughs in which the water drains off immediately. Spigots for hot and cold water should be placed at a convenient height over the trough to permit the men to stick their heads under the running water without any obstructions.

After an inspector has visited an establishment to determine the need of washing facilities, an official order directing the attention of the owner to the provisions of the law is mailed. In many cases the owner conceives the erroneous idea that this department is asking him to install elaborate porcelain ware as found in hotels and residences. This department desires to put no man to a greater expense in furnishing washing facilities than is necessary for the comfort of his employees. However, the department does advise owners who are obliged to install washing facilities to obtain first class material and to determine upon an adequate lay-out for a washroom, because good material will last. Cheap material and workmanship will mean adding a burden of expense for future repairs. The first cost of a first-class outfit might be somewhat greater than the owner of an establishment estimated, but in the long run will entail practically no future expenditure. This advice is given after hearing many business men, who were too shortsighted to notice that cheap material worked to their own detriment.

If an employer wishes to install a very elaborate washroom with the best grade of fittings and goods, this department will interpose no objections. In numerous instances employers have voluntarily built separate buildings adjacent to their factories and have finished the interior with the best equipment. The campaign for sanitary washing facilities under this law has caused an investment of money applied in the majority of cases without regret.

The effect of this law is threefold: first, it adds to the comfort and health of the employee; secondly, it protects the public at large from communication with dirty, sweaty people; thirdly, it educates the families of the breadwinner to observe the same rules of cleanliness. As stated in our report of the previous year, the education of the workman in tidiness and cleanliness will sooner or later be reflected in his home surroundings. Having himself become accustomed to the daily scrub after work and a clean suit of clothes through the use of a locker he feels proud of his own appearance. This condition is then adopted as his own standard and to this new standard his family is obliged to adhere.

As the gospel of factory sanitation spreads the number of reformed homes will increase. This fact can be more clearly understood when we refer to the appended table which shows that washing facilities were ordered to be installed in 589 places of business throughout the State. These 589 factories and workshops employed 73,825 men; without considering the vast number of persons dependent upon these 73,825 persons, the very fact that 73,000 males are receiving an education in factory sanitation is astounding. Such an army of men is equal to the total population of a good sized city. We must remember that the campaign for cleanliness is not confined to one locality, but that these 73,000 men live in all parts of the State.

Each of 589 establishments received an official order to install washing facilities. In the previous year 251 establishments received similar orders. We may safely estimate that over 100,000 persons have become acquainted with the beneficial provisions of this law and during the past two years have advertised its advantages among four or five times their number.

The appended table classifies the various shops into 17 industries in the various cities throughout the State. Seventy-three cities were visited, including Chicago. A slightly greater number of establishments were visited in cities outside of Cook County than in Cook County.

In the classification of industries machine and blacksmith shops form the largest group, foundries and boilers shops ranking second and railroad shops third.

East St. Louis, Quincy, Streator, Peoria, Kankakee and Waukegan received the largest number of inspections outside of Chicago.

RESULTS OF INSPECTIONS ACCORDING TO THE PROVISIONS OF THE WASHHOUSE LAW.

July 1, 1914, to June 30, 1915.

Location of establishments.	Number of places inspected.	Number of employees.	Number of orders issued to establishments classified into following industries.																	
			Foundries and boiler shops.	Machine and blacksmith shops.	Railroad shops.	Public utilities.	Clay products.	Smelters.	Steel mills.	Flour, grain and feed.	Autos, carriages, etc.	Oil refining.	Breweries.	Sheet metalware.	Chemicals.	Pulp products.	Farm implements.	Electrical appliances.	Wood products.	Miscellaneous.
Chicago and Cook County..	289	30,866	48	87	8	....	18	2	7	3	4	2	7	5	3	1	....	7	12	20
Abington.....	1	73	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Albion.....	2	130	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....
Alton.....	4	660	1	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Belleville.....	2	211	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Belvidere.....	2	1,317	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Bloomington.....	2	1,720	1	2	2	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Canton.....	1	1,016	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Carpentersville.....	2	405	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Centralia.....	3	121	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Chillicothe.....	3	203	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
C'inton.....	1	400	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Danville.....	8	1,608	1	2	3	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Decatur.....	4	1,113	1	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
DeKalb.....	3	95	1	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Depeue.....	1	1,002	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
East St. Louis..	45	6,107	1	6	14	....	....	....	1	1	4	....	2	1	....	2	....	....	....	1

RESULTS OF INSPECTIONS ACCORDING TO THE PROVISIONS OF THE WASHHOUSE
LAW—Concluded.

Location of establishments.	Number of places inspected.	Number of employees.	Number of orders issued to establishments classified into following industries.																	
			Foundries and boiler shops.	Machine and black-smith shops.	Railroad shops.	Public utilities.	Clay products.	Smelters.	Steel mills.	Flour, grain and feed.	Autos, carriages, etc.	Oil refining.	Breweries.	Sheet metalware.	Chemicals.	Pulp products.	Farm implements.	Electrical appliances.	Wood products.	Miscellaneous.
Effingham.....	2	43			2															
Elgin.....	2	172		1					1										1	
Fairmount.....	1	156																		
Flora.....	1	69			1															
Freeport.....	3	730	1	1													1			
Fulton.....	2	142		1	1															
Galena.....	2	65	1	1																
Galesburg.....	9	931	2	4	1															1
Geneva.....	2	72	1	1																
Glynn.....	1	340			1															
Granite City.....	2	1,990							1	1				1						
Hillsboro.....	4	404			1				1											
Hoopeston.....	2	250	1	1																
Joliet.....	5	227			1		4													
Kankakee.....	12	2,820	2	2	3	1	2		1											1
Ladd.....	1	77			1															
LaSalle.....	1	270																		
Litchfield.....	1	55	1						1											
Lovejoy.....	4	800																		
Lyons.....	2	260			1		1													
Madison.....	5	2,760	1		1				1							1				
Marseilles.....	1	44															1			
Mattoon.....	6	1,080	1	1	2															
Moline.....	2	855		2																
Momence.....	1	116					1													
Montgomery.....	1	11														1				
Morris.....	1	125		1																
Mt. Carmel.....	2	448			1											1				
Mt. Vernon.....	2	52					1													1
Murphysboro.....	2	512			1		1													
National city.....	2																			
New Athens.....	1	70	1																	
Oglesby.....	1	350					1													
Olney.....	1	27					1													
Ottawa.....	4	234	1	1																1
Paris.....	5	357		2	1	2														
Pekin.....	5	823			2						1									1
Peoria.....	17	1,009	2	5	2						1								1	
Peru.....	1	63		1											1	1				
Pontiac.....	2	120		2																
Princeton.....	1	10				1														
Quincy.....	23	1,555	6	10					1								1			
Robinson.....	1	25										1								
Rock Falls.....	2	275		1													1			
Rockford.....	6	817	1	3													1		1	
Rock Island.....	1	396		1																
Savanna.....	2	181			2															
Sterling.....	4	261	2	2																
Streator.....	22	2,267	3	4	3	1	8				1									1
St. Charles.....	4	167	2	4														1		
Tamms.....	1	10					1													
Taylorville.....	1	34			1															
Venice.....	2	186			1															1
Villa Grove.....	1	700			1															
Waukegan.....	10	264		2							1									1
Wood river.....	2	701										1								1
Total outside Chicago and Cook County.....	300	42,959	39	67	57	9	26	2	4	4	6	4	1	1	1	6	5	1	3	11
Total entire state.....	589	73,825	87	154	65	9	44	4	11	7	10	6	8	6	4	7	5	8	15	31

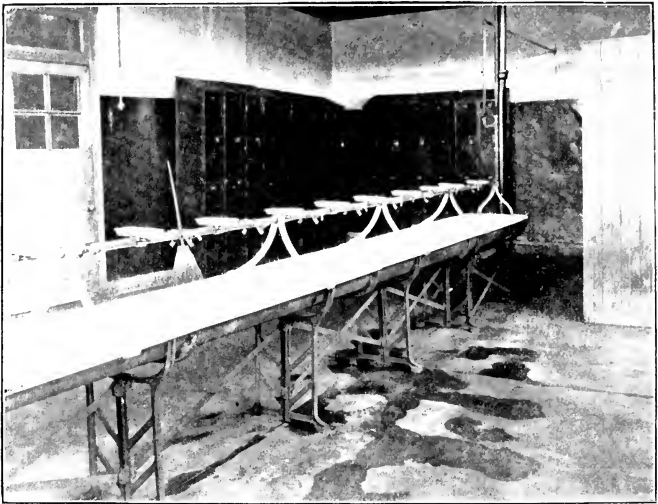


Illustration No. 39. Wash room with hot and cold running water and clothes locker.

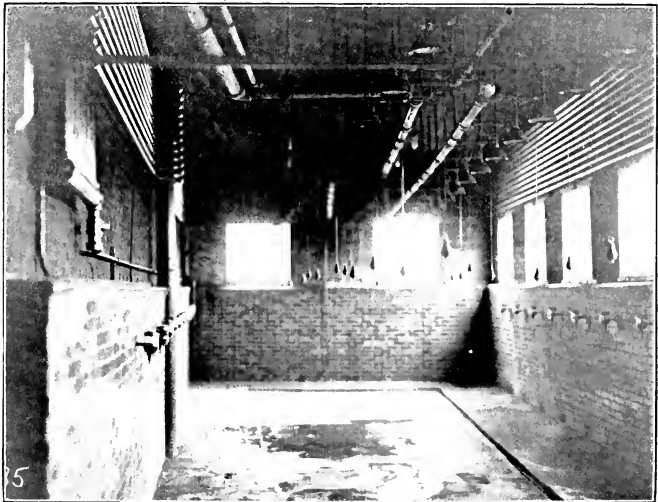


Illustration No. 40. Shower bath equipped with hot and cold water. Note the heating system, also light.

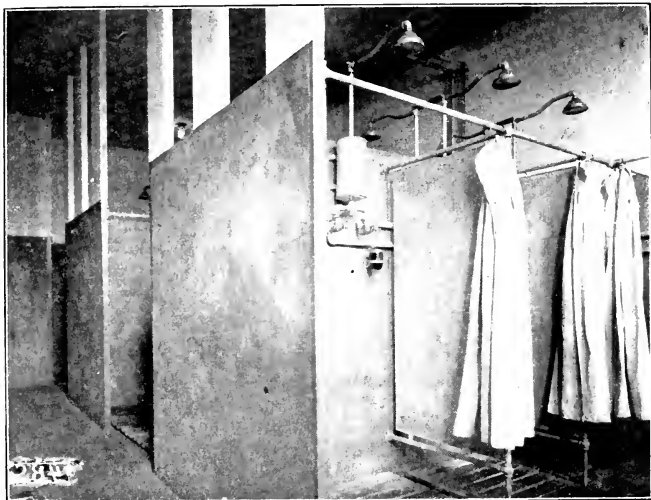


Illustration No. 41. Another shower bath installation.

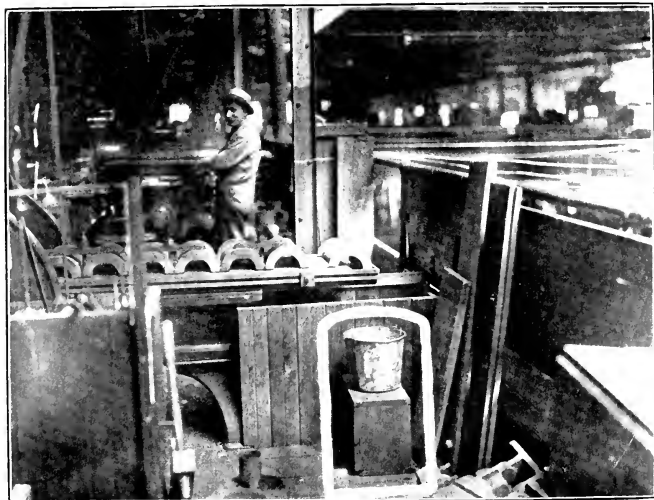


Illustration No. 42. This firm received an order to install adequate washing facilities. This picture shows how this firm interpreted the term "adequate washing facilities." Or did they mean to comply with the letter of the law?

RESULTS OF INSPECTIONS ACCORDING TO THE PROVISIONS OF THE BLOWER LAW.

Before discussing the results of inspections as required by the terms of the Act, we will present an outline of the law in its principal features.

Section 1 of this law states "that all persons operating any factory where emery wheels or belts of any description are used for polishing, buffing, or grinding shall provide such machinery with a blower or exhaust system for the protection of the health of employees against the dangerous dusts arising from such wheels or belts. The dust must be carried off either directly to the outside of the building or to some receptacle so as to confine such dust; an exception is made of machinery requiring water at the point of grinding. The law expressly exempts small shops where only one man is employed."

Section 2 of this law explains the methods by which the purpose of the preceding paragraph may be carried out. Every wheel must be provided with a hood so applied to the wheel that the dust will fall into the hood by centrifugal force and then be carried off by the current of air into a suction pipe attached to the hood.

Section 3 provides for a 3-inch suction pipe on every wheel 6 inches in diameter or less; for a 4-inch suction pipe on wheels 6 to 24 inches in diameter; for a 5-inch suction pipe on wheels 24 to 36 inches in diameter. For wheels over 36 inches in diameter the suction pipe must not be less than 6 inches in diameter. The suction pipe from each wheel must be full size to the main trunk suction pipe and the main suction pipe to which smaller pipes are attached shall, in its diameter and capacity, be equal to the combined area of such smaller pipes. The discharge pipe from the exhaust fan connected with such suction pipe shall be as large or larger than the suction pipe.

Section 4 provides that the necessary blowers shall run at a rate of speed producing a velocity of air in such suction pipe of at least nine thousand feet per minute, equivalent to a pressure of air able to raise a column of water not less than 5 inches in a "U" shaped tube. All branch pipes must enter main trunk pipe at an angle of 45 degrees or less; and the main trunk pipe shall be below the emery or buffing wheels and as close to the same as possible, and must be located either upon or beneath the floor. All elbows must have smooth surfaces, having a radius in the throat of not less than two diameters of the pipe on which they are connected.

Section 5 charges the Chief Factory Inspector with the enforcement of this law.

Section 6 provides a penalty for noncompliance with the provisions of this Act of not less than \$25 and not exceeding \$100.

Recommendations on the construction of adequate exhaust systems will be found in great detail on pages 237-239 of the twenty-first annual report of the Chief Factory Inspector.

Table No. 1 offers a concrete review of the inspection work under this law. In the course of the year 1,150 inspections were made in 326 establishments located in Cook County and 88 inspections took place in 37 towns outside of Cook County, making a total of 1,238 inspections in

363 establishments for the entire State. The table further shows the number of establishments divided into thirteen industries according to the nature of business. Two thousand, three hundred and eighty-two men, 43 women and 6 boys between the ages of 14 and 16 years were employed in the 326 factories located in Cook County. In the preceding year no minors under 16 years of age were reported. The 37 establishments located in cities outside of Cook County employed 403 men. The total number of employees engaged in polishing, buffing and grinding in the 363 factories throughout the State being 2,834.

The hours of employment in the various factories doing this class of work are of interest. By far the majority of establishments adhere to the nine hour day; of the 326 workshops located in Cook County 251 worked nine hours per day; 55 worked nine and a half hours per day; 15 worked ten hours per day; 3 worked 8 hours per day; 1 worked $8\frac{1}{4}$ hours per day; and 1 worked $8\frac{3}{4}$ hours per day. In the 37 plants outside of Cook County 23 worked on a nine hour a day schedule; 7 worked $9\frac{1}{2}$ hours; 6 worked 10 hours and 1 worked $9\frac{3}{4}$ hours. For the entire State the table shows that three establishments work an 8 hour day; 1 an $8\frac{1}{2}$ hour day; 274 a 9 hour day; 62 a $9\frac{1}{2}$ hour day; 1 a $9\frac{3}{4}$ hour day and 21 a 10 hour day.

In the 363 establishments 4,154 wheels were reported on of which 4,049 were provided with proper protection leaving 105 without adequate protection. In Cook County 326 factories had 3,571 wheels of which 75 were unprotected, while in 37 plants located outside of Cook County 583 wheels are reported of which 30 were unprotected.

A total of 264 orders were issued to remedy defective systems or to install a system where none was being used; 70 orders called for increase of velocity; 70 orders for the improvement of present systems; 57 for installation of new exhaust systems; 24 orders for adequate hoods; 17 for change in angle of branch pipes and 26 orders for repairing defective pipes and cleaning same. Of the 264 orders issued 204 affected factories in Cook County, the remaining 60 orders applied to such establishments as were located in towns outside of Cook County.

TABLE 1—RESULTS OF INSPECTIONS ACCORDING TO THE BLOWER LAW.

Entire State of Illinois, July 1, 1914, to June 30, 1915.

Location of establishments in—	Number of establish- ments.	Number of inspections.	Industries.													Number of employees.			
			Job shops.	Stoves.	Tools.	Implements.	Beds.	Fixtures.	Cutlery.	Hardware and supplies.	Novelties.	Machinery.	Musical in- struments.	Jewelry.	Foundry products.	Total.	Men.	Women.	Boys 14 to 16 years.
Chicago and Cook County.	326	1,150	51	6	16	7	2	83	3	85	4	47	6	4	12	2,431	2,382	43	6
Cities outside of Chicago and Cook County.....	37	88	3	15	....	....	1	4	..	7	1	2	....	1	3	403	403	..	....
Total entire state.....	363	1,238	54	21	16	7	3	87	3	92	5	49	6	5	15	2,834	2,785	43	6

TABLE NO. 1—Concluded.

Location of establishments in—	Number of establishments having the following hours of employment.						Number of wheels.			Orders issued.							
	8	8½	9	9½	10	Total.	Protected.	Unprotected.	Total.	Increase velocity.	Improve equipment.	Install system.	Provide hoods.	Change angle branch pipes.	Repair and clean pipes.		
Chicago and Cook County...	3	1	1	251	55	..	3,571	3,496	75	204	53	53	50	15	13	20	
Cities outside of Chicago and Cook County.....	..	..	..	23	7	1	583	553	30	60	17	17	7	9	4	6	
Total entire state.....	3	1	1	274	62	1	4,154	4,049	105	264	70	70	57	24	17	26	

Table No. 2 covers establishments located in Chicago and Cook County arranged in thirteen industrial groups. It will be noted that fixture factories and such as make hardware and supplies employ the largest number of men, being more numerous than any other group and work longer hours than the others. Machinery and job shops rank next in number as well as in number of employees. These four industrial groups contained all the unprotected wheels, with the exception of two under the novelty classification, and over four-fifths of the corrective orders issued being confined to them.

TABLE NO. 2—RESULTS OF INSPECTIONS ACCORDING TO THE BLOWER LAW.

Chicago and Cook County, July 1, 1914, to June 30, 1915.

Industry.	Number of establishments.	Number of inspections.	Number of employees.				Hours of employment.									
			Total.	Men.	Women.	Boys 14 to 16 years.	8	8½	9	9½	10					
Job shop.....	51	199	274	265	4	5	1	1	1	44	4	...	1			
Stoves.....	6	8	42	42	...	...	...	...	...	4	1	1	1			
Tools.....	16	38	148	148	...	...	...	...	...	10	5	1	1			
Implements.....	2	16	207	207	...	...	...	1	...	...	...	...	...
Beds.....	2	8	5	5	...	...	...	...	...	...	...	...	...
Fixtures.....	28	274	586	548	37	1	...	...	...	63	19	1	1			
Cutlery.....	12	12	89	89	...	...	...	...	...	2	1	...	...	
Hardware and supplies.....	35	282	573	571	2	...	...	...	...	65	16	4	...			
Novelties.....	4	9	24	24	...	...	...	...	...	3	1	...	...	
Machinery.....	47	253	320	320	...	...	1	...	...	39	4	...	...	
Musical instruments.....	6	6	17	17	...	...	...	...	...	5	1	...	...	
Jewelry.....	4	4	46	46	...	...	...	...	...	4	...	...	...
Foundry products.....	12	41	100	100	...	...	...	...	...	5	3	...	...	
Total.....	326	1,150	2,431	2,382	43	6	3	1	1	251	55	15	...			

TABLE NO. 2—Concluded.

Industry.	Number of wheels.			Orders issued.						
	Total.	Protected.	Unprotected.	Total.	Increase velocity.	Improve equipment.	Install system.	Provide hoods.	Change angle of branch.	Repair and clean pipes.
Job shop.....	440	410	30	35	7	7	12	4	1	4
Stoves.....	56	56	.....	11	3	3	2	1	1	1
Tools.....	188	188	.....	12	4	4	3	.....	.....	1
Implements.....	286	286	.....	4	2	2	.....	.....	.....	.....
Beds.....	8	8	.....	1	.....	.....	.....	.....	.....	1
Fixtures.....	933	903	30	54	15	15	12	3	5	4
Cutlery.....	108	108	.....	1	.....	.....	1	.....	.....	.....
Hardware and supplies.....	820	809	11	53	13	14	14	6	2	4
Novelties.....	32	30	2	2	.....	.....	2	.....	.....	.....
Machinery.....	475	473	2	22	7	7	3	1	2	2
Musical instruments.....	30	30	.....	4	2	1	.....	.....	.....	1
Jewelry.....	53	53	.....	.....	.....	.....	.....	.....	.....	.....
Foundry products.....	142	142	.....	5	.....	.....	1	.....	2	2
Total.....	3,571	3,496	75	204	53	53	50	15	13	20

Table No. 3 shows the records of inspections classified according to cities outside of Chicago and Cook County. Belleville and Quincy contain more than 10 shops each and received 21 and 37 inspections respectively. In Belleville, 5 of the shops manufactured stoves; 3 foundry products, and 2 doing job work. All of the shops inspected in Belleville work on a 9 hour a day schedule. Belleville employs more men than the other cities and also had more unprotected wheels. In Quincy 10 of the shops work on a 9 hour a day basis, the remaining 3 follow a 10 hour schedule. Quincy, Elgin and Belleville were the only towns with unprotected wheels; as many orders for corrections and compliance with the law were issued to establishments located in Quincy as in all the other towns located outside of Cook County combined. This circumstance may be attributed to the fact that a special squad inspection was made during January and February, 1915, in order to "clean up" and make the people of Quincy familiar with factory laws. Previous to this squad inspection no inspectors of this department had ever been in Quincy except for a few days. The people of Quincy were practically ignorant of the existence of a factory inspection department.

TABLE NO. 3—RESULTS OF INSPECTIONS ACCORDING TO THE BLOWER LAW.

In cities outside of Cook County, July 1, 1914, to June 30, 1915.

City.	Number of establishments.	Number of inspections.	Industry.								Number of employees.			
			Job shops.	Stoves.	Beds.	Fixtures.	Hardware and supplies.	Novelties.	Machinery.	Jewelry.	Foundry products.	Total.	Men.	Women.
Belleville.....	10	21	2	5							3	105	105	
Bloomington.....	1	3	1									3	3	
East St. Louis.....	1	4			1							6	6	
Elgin.....	4	6				1		1		1		79	79	
New Athens.....	1	2		1								6	6	
North Chicago.....	4	5				1	2		1			89	89	
Quincy.....	13	37		9	1	1	2		1			81	81	
Waukegan.....	3	7				1	2					34	34	
Total.....	37	88	3	15	1	4	7	1	2	1	3	403	403	

TABLE NO. 3—Concluded.

City.	Hours of employment.				Number of wheels.			Orders issued.						
	9	9½	9¾	10	Total.	Protected.	Unprotected.	Total.	Increase velocity.	Improve equipment.	Install system.	Provide hoods.	Change angle of branch pipe.	Repair and clean pipes.
Belleville.....	10	—	—	—	178	158	20	13	3	3	4	2	—	1
Bloomington.....	—	1	—	—	6	6	—	—	—	—	—	—	—	—
East St. Louis.....	—	—	1	—	8	8	—	—	—	—	—	—	—	—
Elgin.....	—	4	—	—	88	82	6	8	3	3	1	1	—	—
New Athens.....	1	—	—	—	6	6	—	—	—	—	—	—	—	—
North Chicago.....	2	—	—	2	113	113	—	5	2	2	1	—	—	—
Quincy.....	10	—	—	3	144	140	4	30	2	2	1	6	4	5
Waukegan.....	—	2	—	1	40	40	—	4	2	2	—	—	—	—
Total.....	23	7	1	6	583	553	30	60	17	17	7	9	4	6

Table No. 4 shows the nature of work done in the various establishments visited. Three hundred and twenty-six factories located in Chicago and Cook County were reported as doing polishing, 294 were buffing and 61 grinding. In plants outside of Chicago and Cook County, 35 did polishing, 31 buffing and 10 grinding; it will be noticed that most of the establishments confine themselves to polishing and buffing, only about one-tenth of the factories do grinding. The condition of blowers in most

of the shops was good; of the 326 factories in Chicago and Cook County, only 27 were reported as having their blowers in poor condition, while the blowers of almost 50 per cent of the shops in cities outside of Cook County were found to be in bad condition.

In Chicago and Cook County blowers were located below the wheels in 255 factories, 71 being reported as having their blowers constructed above the wheels. In 30 shops outside of Cook County the blowers were placed below the wheels and in 7 cases above the wheels.

The test for adequate pressure according to the "U" shaped tube failed in 63 of the factories in Cook County. In almost 50 per cent of the factories outside of Cook County the test showed that the required amount of air per minute was below the legal standard.

In most of the establishments the dust was disposed of through collector systems. In Chicago and Cook County, 19 shops disposed of the dust in a free state and 6 through flues. In shops outside of Chicago and Cook County dust was disposed of through the flue in only one instance, and 2 factories employed the free system. With the exception of 8 shops in Chicago all the factories were equipped with oval hoods; the 8 shops mentioned used the funnel-shaped hoods.

In only 26 establishments out of the 326 inspected in Chicago were the pipes found in bad condition. In 8 shops out of a total of 37 located outside of Cook County pipes were reported as being below standard.

The location of workroom in which polishing, buffing and grinding is done becomes of the utmost importance, when the health of the employees is taken into consideration. Men doing this kind of work require an abundance of fresh air, good ventilation and plenty of light. This condition is seldom obtained in basement shops; they have shown themselves to be vicious places of employment; for this reason the Forty-ninth General Assembly passed a law prohibiting the use of basements for this kind of work. The enforcement of this law has been placed in the hands of the Chief Factory Inspector, a copy of this new law is given under the caption of "New Legislation."

Most of the workrooms were reported as being located on or above the first floor; 29 shops in Chicago and 1 in Quincy were found to be located in the basement. The majority of the factories in Cook County were located on or above the third floor, while 95 shops occupied the ground floor and 66 the second floor. In cities outside of Cook County 30 shops were on the ground floor; 5 on the second floor; 1 on the third floor and 1 in the basement.

In every factory visited, electricity was employed as the motive power, none being reported as using steam. Only 8 of the shops in Chicago and 2 outside of Cook County used direct current, the indirect current being used almost exclusively.

TABLE NO. 4—ANALYSIS OF REPORT OF INSPECTIONS ACCORDING TO THE BLOWER LAW.

State of Illinois, July 1, 1914, to June 30, 1915.

Location of establishments.	Number of establishments doing—			Establishments in which condition of blower was—		Number of establishments in which blower is located—		Number of establishments in which pressure test in U tube was—		Number of establishments disposing of dust through following systems—		
	Polishing.	Buffing.	Grinding.	Good.	Bad.	Above wheel.	Below wheel.	Below five inches.	Five inches or over.	Collector.	Free.	Flue.
Chicago and Cook County.....	306	294	61	299	27	71	255	63	263	301	19	6
Belleville.....	9	8	5	6	4	1	9	4	6	9	1	.....
Bloomington.....	1	1	.....	1	.....	.....	1	.....	1	1	.....	.....
East St. Louis.....	1	1	.....	1	.....	.....	1	.....	1	1	.....	.....
Elgin.....	4	4	.....	1	3	1	3	3	1	4	.....	.....
New Athens.....	1	1	.....	.....	1	.....	1	1	.....	.....	1	.....
North Chicago.....	4	4	1	2	2	2	2	2	2	4	.....	.....
Quincy.....	12	9	4	7	6	2	11	7	6	12	.....	1
Waukegan.....	3	3	.....	1	2	1	2	2	1	3	.....	.....
Total cities outside Chicago and Cook County.....	35	31	10	19	18	7	30	19	18	34	2	1
Total for State.....	341	325	71	318	45	78	285	83	281	335	21	7

TABLE NO. 4—Concluded.

Location of establishments.	Kind of hoods—		Number of establishments in which condition of pipes was—		Location of department—				Kind of motive power—		
	Oval.	Funnel.	Good.	Bad.	Basement.	First floor.	Second floor.	Third floor and above.	Steam.	Electricity.	
										Direct current.	Indirect current.
Chicago and Cook County.....	318	8	300	26	29	95	66	136	.....	8	318
Belleville.....	10	.....	9	1	.....	10	.....	.....	.....	1	9
Bloomington.....	1	.....	1	.....	.....	1	.....	.....	.....	.....	1
East St. Louis.....	1	.....	1	.....	.....	1	.....	.....	.....	.....	1
Elgin.....	4	.....	4	.....	.....	4	.....	.....	.....	.....	4
New Athens.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	1
North Chicago.....	4	.....	4	.....	.....	3	.....	1	.....	1	3
Quincy.....	*8	.....	7	6	1	8	4	.....	.....	.....	13
Waukegan.....	3	.....	3	.....	.....	2	1	.....	.....	.....	3
Total cities outside Chicago and Cook County..	31	.....	29	8	1	30	5	1	.....	2	35
Total for State.....	349	8	329	34	30	125	71	137	.....	10	353

* Six establishments had no hoods of any kind.

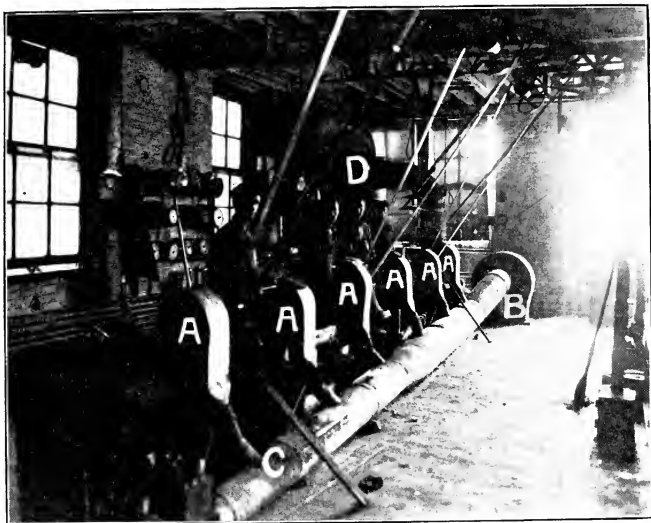


Illustration No. 43. This picture shows an adequate blower system. "A" represents the hoods over the wheels, "B" and "D" the collector and "C" the pipe of varying diameter leading the dust to the collector.

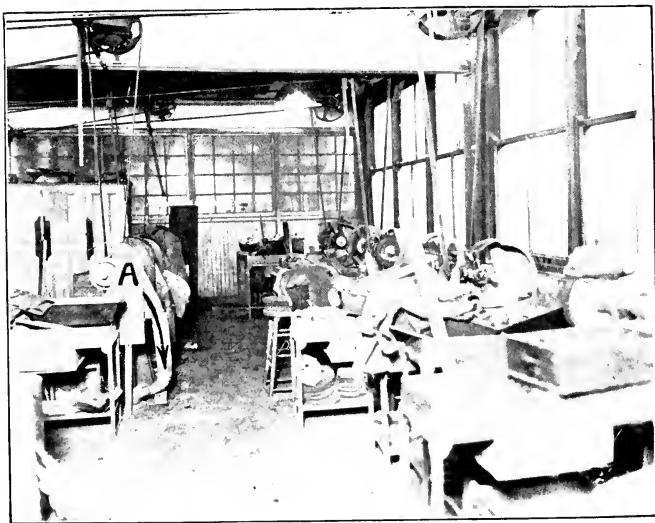


Illustration No. 44. This picture shows a very light and well ventilated shop where polishing and buffing is done. All the wheels are equipped with suction or blower systems to carry off the dust and fumes.

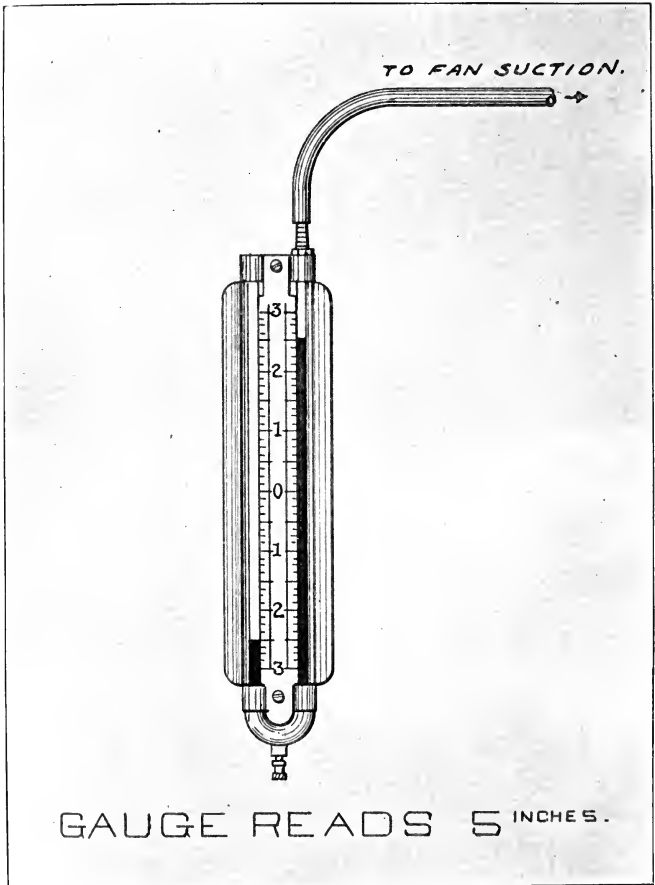
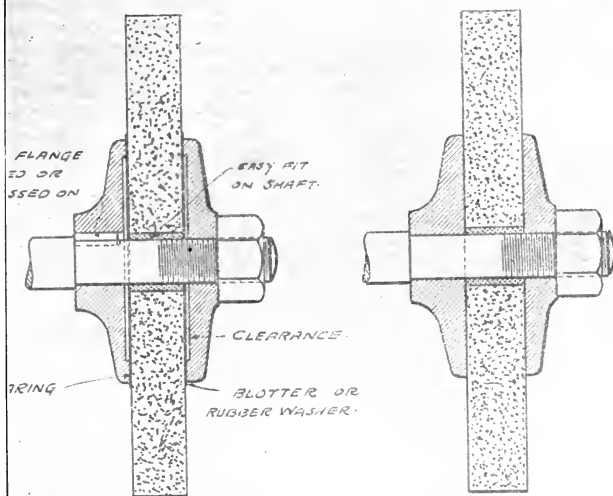


Illustration No 45. Drawing of U-shaped tube to test pressure of blower systems, as stated in the "Blower Law".

Department of Factory Inspection
State of Illinois



THE RIGHT METHOD.

THE WRONG METHOD.

RIGHT & WRONG METHODS OF MOUNTING
EMERY WHEELS.

Illustration No. 46. Right and wrong method of mounting emery wheels.

RESULTS OF INSPECTIONS ACCORDING TO THE PROVISIONS OF THE STRUCTURAL LAW.

The "Structural Law" which became effective on July 1, 1907, offers protection against loss of life or limb to every workman engaged in the erection, repairing, altering, removing or painting of any structure, except a private dwelling.

Section 1 of the law provides that scaffolds, hoists, stays, ladders, supports or other mechanical contrivances used in the erection, repairing, altering, removal or painting of any house, building, bridge, viaduct or other structure must be erected in such a manner as to afford complete protection to the life and limb of any person engaged in any class of work

thereon, or passing under same and to prevent material from falling; scaffolding more than twenty feet from the ground must be provided with a safety rail at least thirty-four inches above the floor and extending along the entire length of the outside and ends, and such scaffolds must be fastened to the building to prevent swaying.

Section 2 states that if in any building in process of erection the distance between the enclosing walls is more than twenty-four feet, in the clear, there shall be maintained proper intermediate supports for the joists, which supports shall be either brick walls, or iron or steel columns, beams, trusses or girders, and the floors in such building shall be designed in such manner as to be capable of bearing in all their parts in addition to the weight of the floor construction, partitions and permanent fixtures, and mechanisms that may be set up upon the same, a live load of fifty pounds for every square foot of surface.

Section 3 makes it obligatory upon the owners of the building to post a placard on each floor stating the load per square foot of floor surface which may with safety be applied to that particular floor during such construction, or if the strength of the different parts of any floor varies, then there shall be such placards for such varying part of such floor. To load any floors or parts thereof to a greater extent than the load indicated on such placards is unlawful. All placards must be approved by the State Factory Inspector.

Section 4 charges the State Factory Inspector with the duty of inspecting all scaffolding and the slings, hangers, blocks, pulleys, stays, braces, ladders, irons or ropes used in the construction, alteration, repairing, cleaning or painting of buildings, to ascertain whether they are unsafe and liable to prove dangerous to the life and limb of any person. If, upon examination, scaffolds or any of the parts are found dangerous, the State Factory Inspector shall at once notify the responsible party of such fact, and prohibit the use thereof and require the same to be put in a safe condition. Such notice may be served personally or by placard affixed to the defective part; after such notice has been so served or posted the responsible party shall cease making use of any dangerous apparatus so designated.

The State Factory Inspector has free access to any building.

All swinging or stationary scaffolds or platforms must be able to bear four times the maximum weight required to be placed thereon and shall not be overloaded.

Section 5 directs that any person hiring another in the erecting, repairing, altering or painting of any water pipe, standpipe, tank, smoke-stack, chimney, tower, steeple, pole, staff, dome or cupola, shall keep at all times safe scaffolds not less than sixteen feet below point of work, particularly when such work is being performed at a height of thirty-two feet for the purpose of preventing the workmen from falling in case of any accident.

Section 6 makes it incumbent upon contractors, where the plans require the floors to be arched between the beams, to complete the flooring as the building progresses to not less than within three tiers below that on which the iron work is being erected. If the plans do not require filling in between the beams all contractors for the carpenter work in course of construction shall lay a safe temporary floor on each story as

the building progresses to not less than within two stories below the one to which such building has been erected. Where double floors are not to be used, the contractor shall keep plank over the floor two stories below where the work is being performed. If the floor beams are of iron or steel the contractor for the iron or steel work shall thoroughly plank over the entire tier of beams, except spaces for raising materials or for stairways and elevator shafts.

Section 7 demands that contractors enclose all openings in floors where hoisting apparatus is used on all sides by a substantial barrier at least eight feet in height. If practical, all hoisting machines must be set on the ground, or if placed on one of the floors above, must be properly supported with a foundation capable of safely sustaining twice the weight of such machine. Where buildings are over five stories high no material is permitted to be hoisted over a public highway, unless such street be barricaded.

If hoisting machines are used, a complete system of communication by means of signals shall be provided in order that prompt communication may be had at all times between operator of engine and the employees engaged on the job.

The penalty clause provides upon conviction for a fine of from twenty-five (\$25) to five hundred dollars (\$500), or imprisonment of from three (3) months to two (2) years, or both fine and imprisonment.

This law is absolutely necessary for the safety of large groups of men employed on buildings, especially the high steel and concrete structures commonly termed "skyscrapers". Danger is ever present from the time that the wells are dug until the last brick has been laid or the last nail driven. In the course of constructing a modern skyscraper, it often happens that more than a thousand workmen are engaged on one job, representing numerous trades, such as well diggers, engineers, bridge-men, carpenters, plasterers, electricians, steam fitters, plumbers, etc. After the first few floors have been erected these various trades begin their operations as rapidly as possible. This rush is often encouraged by reason of the fact that the contractor receives a bonus of a certain sum per day, if he completes the building in advance of schedule time; on the other hand, if the contractor fails to complete the building on a specified date, he is frequently subject to a stipulated indemnity for each day that the building is untenable. This mad rush often results in numerous accidents to the workmen.

Table No. 1 shows in concise form the results of inspections in the enforcement of this law. Seven hundred and twenty-two inspections are recorded for 386 jobs, the nature of the work being indicated in the table. The majority of jobs inspected were performed in Chicago and Cook County on account of the greater building activities of the larger class of structures in this city. However, a number of erection jobs were given close attention in cities located outside of Cook County. This is the first time in the history of this department that inspections according to the provisions of this law were made outside of Chicago. Over 14,000 men were engaged on buildings in Chicago, and over 2,000 on work outside of Cook County. In 278 instances orders were issued to insure safe working conditions, as outlined in the law. Although the reporting of accidents to one official or one State department is not

compulsory, this department has endeavored to keep a list of accidents as complete as possible under the circumstances. Such contractors as come under the "Compensation Law" report accidents to the Industrial Board, but those having refused to avail themselves of the services of the Industrial Board or the provisions of the "Compensation Law" generally fail or neglect to report accidents of their workmen. The records of the department, though far from complete, show that during the last year six fatal and 57 nonfatal accidents happened. Attention is called to the fact that all fatalities happened in Chicago.

TABLE NO. 1.—SUMMARY OF INSPECTIONS ACCORDING TO THE STRUCTURAL LAW FOR THE ENTIRE STATE FOR THE YEAR.

July 1, 1914, to June 30, 1915.

Location.	Number of jobs.								Number of inspections.	Number of men engaged on jobs.	Number of orders issued.	Number of accidents.		
	Total.	Erecting.	Repairing.	Altering.	Wrecking.	Cleaning.	Painting.	Excavating.				Miscellaneous.	Fatal.	Nonfatal.
Chicago and Cook County.	329	243	1	7	4	17	28	17	12	640	14,576	243	6	50
Outside of Cook County...	57	54	.....	.....	.....	.....	3	.....	.....	82	2,154	35	.....	7
Total for entire State..	386	297	1	7	4	17	31	17	12	722	16,730	278	6	57

The second table presents the various kinds of work performed in Cook County on the structures designated. One hundred and forty-four dwellings, stores and apartment buildings while under construction received 224 inspections. One fatal and fourteen nonfatal accidents are reported for this class of buildings. Fifty erection jobs of the regular skyscraper type were subjected to 160 inspections and our records show three deaths and thirty-two cases of severe injury during the year. Twenty-eight inspections of bridges and pier construction work were made resulting in the discovery of one nonfatal accident. Eight high stacks and tanks in the course of erection required sixteen inspections; one case of death being reported and one case of severe injuries.

Painting of apartment houses, office buildings and churches necessitated numerous inspections. Two nonfatal accidents happened on account of failure to provide rails on scaffolds.

Excavating work was confined to office building foundations; the dangers to be guarded against in this kind of work is entirely different from any of the above mentioned classes of labor. In excavating or well digging one of the principal factors is fresh and pure air. Then again the hoisting apparatus must be safe. This subject will be taken up more in detail under discussion of the orders issued to excavating contractors.

TABLE NO. 2—INSPECTIONS ACCORDING TO THE STRUCTURAL LAW—COOK COUNTY—1914-1915.

Nature of work.	Class of building.									
	Dwellings, stores and apartments.					Office buildings and hotels.				
	Number of jobs.	Number of inspections.	Number of employees on job.	Accidents.		Number of jobs.	Number of inspections.	Number of employees on job.	Accidents.	
				Fatal.	Nonfatal.				Fatal.	Nonfatal.
Erecting.....	144	224	4,170	1	14	50	160	6,002	3	32
Repairing.....	1	2	2			1	1	10		
Altering.....						4	6	56	1	
Wrecking.....						4	8	215		
Cleaning.....	2	4	4			12	14	57		3
Painting.....	21	31	99		1	1	2	22		6
Excavating.....						17	36	1,138		12
Miscellaneous.....	*2	4	19			†9	14	382		17

TABLE NO. 2—Concluded.

Nature of work.	Class of building.									
	Docks, piers, bridges and viaducts.					Stacks, tanks and elevators.				
	Number of jobs.	Number of inspections.	Number of employees on job.	Accidents.		Number of jobs.	Number of inspections.	Number of employees on job.	Accidents.	
				Fatal.	Nonfatal.				Fatal.	Nonfatal.
Erecting.....	11	28	411		1	8	16	324	1	1
Repairing.....										
Altering.....	3	6	79							
Wrecking.....										
Cleaning.....										
Painting.....										
Excavating.....										
Miscellaneous.....	†1	2	61							

* Two jobs on which all ropes were condemned.

† Broken derrick; compressor engine guard; safety device on niggerhead; canopy over street; cover over engineer guard belt on motor and flywheel; replace rubber hose by copper metal base; guard gears on power pump; overloaded derrick; overload dbuckets; electric display sign erection without temporary floors; fire escape without rail on scaffold.

‡ Chains condemned under section 1, to be replaced by stronger ones.

The third table shows the kind of orders issued and the nature of the work performed on certain classes of buildings. In 61 instances, mostly on erecting, cleaning and painting jobs, it was essential to provide safe scaffolds. Safe temporary floors were laid upon orders of the deputy inspector in 19 cases. Rails around floor openings or around dangerous machinery were placed in position in 63 instances. The deputy inspector found 69 hoisting machines in an unsafe condition and gave that number of orders to insure safety. Barricades 8 feet in height

were ordered around elevator shafts in 21 cases. For the purpose of encasing of signal systems on erecting jobs six orders were given.

TABLE NO. 3—CLASSIFICATIONS OF ORDERS OF INSPECTIONS ACCORDING TO THE STRUCTURAL LAW—CHICAGO AND COOK COUNTY.

July 1, 1914, to June 30, 1915.

Kind of orders issued.	Dwellings, stores and apartments on which orders were issued.						Office buildings and hotels on which orders were issued.						Schools and churches on which orders were issued.					
	Nature of work.						Nature of work.						Nature of work.					
	Erecting.	Repairing.	Altering.	Wrecking.	Cleaning.	Painting.	Erecting.	Repairing.	Altering.	Wrecking.	Cleaning.	Painting.	Erecting.	Repairing.	Altering.	Wrecking.	Cleaning.	Painting.
Safe scaffolds.....	18	1	..	..	1	14	7	1	..	2	1	..	3	..	..	..	3	4
Proper floor supports.....	2	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Safe tackle, etc.....	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Safe temporary floors.....	1	..	..	..	..	..	12	..	..	..	..	..	..	..	..	..	..	..
Rails.....	3	1	..	..	1	4	9	1	..	..	1	1	1	..	..	..	..	2
Safe hoisting machinery.....	3	3	..	..	..	..	10	..	..	..	..	..	..	..	..	..	..	..
Barricades.....	2	..	..	..	..	..	10	..	..	..	..	..	..	..	..	..	..	..
Adequate signal systems.....	2	..	..	..	..	..	2	..	..	..	..	1	..	..	..	..	..	..

TABLE NO. 3—Concluded.

Kind of orders.	Docks, piers, bridges, viaducts on which orders were issued.						Stacks, tanks and elevators on which orders were issued.					
	Nature of work.						Nature of work.					
	Erecting.	Repairing.	Altering.	Wrecking.	Cleaning.	Painting.	Erecting.	Repairing.	Altering.	Wrecking.	Cleaning.	Painting.
Safe scaffolds.....	1	..	..	..	..	..	3	..	..	..	..	..
Proper floor support.....	1	..	..	..	..	..	1	..	..	..	..	..
Safe tackle, etc.....	1	..	..	..	..	..	..	..	..	..	..	..
Safe temporary floor.....	1	..	..	..	..	..	..	..	..	..	..	..
Rails.....	2	..	..	..	..	..	2	..	..	..	..	..
Safe hoisting machinery.....	3	..	..	..	..	..	..	..	..	..	..	..
Barricades.....	1	..	..	..	..	..	1	..	..	..	..	..
Adequate signal systems.....	1	..	..	..	..	..	..	..	..	..	..	..

The fourth table enumerates the cities outside of Cook County, where inspections were made, shows the number of jobs and how often inspected, the number of men engaged at work and the orders issued.

Until the past year no inspections according to the provisions of the "Structural Law" had been made outside of Cook County. During the fiscal year 31 cities, in which the erection of new buildings was under way, were visited by the inspector.

With the exception of two jobs in Aurora and two jobs in East St. Louis all of the work consisted of erecting new structures. A total of 57 jobs were inspected 82 times.

A complete record of fatal accidents could not be secured, however, information of seven severe injury cases was obtained.

TABLE NO. 4—INSPECTIONS ACCORDING TO THE STRUCTURAL LAW IN CITIES OUTSIDE OF COOK COUNTY.

July 1, 1914, to June 30, 1915.

Name of city.	Number of jobs.	Number of inspections.	Number of employees on job.	Accidents.	Nature of work.	Class of building.	Orders issued.
Alton.....	1	1	125	.....	Erecting.....	State hospital.....	None.
Aurora.....	2	2	27	.....	Erecting and painting.....	Store and hospital.....	None.
Belleville.....	1	1	24	.....	Erecting.....	Public library.....	Scaffolds unsafe.
Bloomington.....	3	3	155	.....	..do.....	High school and factory.....	None.
Champaign.....	1	2	25	.....	..do.....	Hotel.....	Hoist and shaft unguarded.
Danville.....	3	3	133	1	..do.....	Bridge, public school and office building..	Unsafe scaffolds, hoists unguarded.
Decatur.....	6	9	135	.....	..do.....	Hotel, department store and office building.....	Unsafe scaffolds, hoists and shafts unguarded.
Dixon.....	1	1	20	.....	..do.....	State hospital.....	None.
East St. Louis..	5	5	255	.....	Erecting and painting...	Stack, stores, factory buildings.....	Enclose cage, protect motor and belt on hoist, unsafe scaffolds, hoist unguarded.
Edwardsville....	1	1	60	.....	Erecting.....	Court house.....	None.
Elgin.....	1	1	6	.....	..do.....	State hospital.....	None.
Freeport.....	1	2	28	.....	..do.....	Y. M. C. A. building.	Unsafescaffolds.
Galesburg.....	1	2	25	1	..do.....	..do.....	Unsafe scaffolds, hoist unguarded.
Hamilton.....	1	1	4	.....	..do.....	Bridge.....	None.
Joliet.....	2	2	56	1	..do.....	School and hotel....	Hoists unguarded
Kankakee.....	2	2	53	1	..do.....	State hospital.....	Hoists unguarded.
Lake Bluff.....	1	4	10	.....	..do.....	Wireless tower.....	Unsafe scaffolds, no temporary flooring.
LaSalle.....	1	2	134	.....	..do.....	Hotel.....	None.
Lincoln.....	1	1	14	1	..do.....	School.....	Poor signal system.
Lisle.....	1	1	25	.....	..do.....	College.....	Material hoist unguarded.
Mooseheart.....	2	2	207	1	..do.....	Fraternity building and printing plant.	Unsafescaffolds.
Niles.....	1	4	85	.....	..do.....	School.....	Provide temporary flooring.
Peoria.....	2	2	142	.....	..do.....	High school and warehouse.....	Material hoist unguarded.
Quincy.....	2	2	86	.....	..do.....	Bank building and store.....	Unsafe scaffolds, hoists unguarded.
Rockford.....	3	4	75	.....	..do.....	Office building, Masonic Temple Shrine Temple....	Material hoist unguarded.
Rock Island.....	1	1	3	.....	..do.....	Hotel.....	Unsafe scaffolds.
Rondout.....	1	1	38	.....	..do.....	Grain tank.....	None,
Streator.....	3	3	54	.....	..do.....	Hospital, Y. M. C. A. building and factory	Material hoists unguarded.
Springfield.....	3	11	52	1	..do.....	Stores and office buildings.....	Broken guy cable, no temporary flooring, hoists unguarded.
Urbana.....	2	5	80	.....	..do.....	University buildings.	No barricade around openings, no temporary flooring.
Watertown.....	1	1	18	.....	..do.....	State hospital.....	Material hoist unguarded.

Construction work no matter of what nature is always dangerous; for that reason the present law covers almost every division of trade connected with this class of work. However, the building line is subject to so many new methods, that this department is constantly confronted with the problem of guarding against new hazards. It has frequently happened that the law did not apply and, while the danger was threatening, the contractor could not be forced to remedy the dangerous condition.

For this reason an attempt was made to amend the present law during the session of the Forty-ninth General Assembly. House Bill 670, while not seeking to replace the present law, was intended rather to strengthen it.

This bill provided for an addition to section 1 of the present law: "on all stacks 10 feet or more in height and all tanks, supports, chimneys, towers and steeples where work is being done from the inside, that three sets of scaffolds shall be used." The necessity for this amendment became apparent to the Department of Factory Inspection and the Building Commissioner on account of the numerous accidents due to the breaking of scaffolds. The additional expense to which the contractor is subjected is very small. It simply requires a few additional planks.

Another amendment to section 1 provides that when material is being hoisted on the inside of enclosed chimneys, towers, steeples and enclosed shaftways, the buckets, boxes, tubs or any other receptacles shall be provided with guides and be securely covered to prevent tools, bricks or other material from falling out of same. This amendment was suggested owing to the numerous accidents occurring as a result of material falling out of buckets and receptacles used in hoisting.

Section 3a. The next amendment inserts a new section known as 3a in the present law, which in substance provides that during the construction of all buildings, that are to be eight stories in height, an elevator must be furnished and operated for bringing the workmen to and from their work. The necessity for such a provision is apparent, when a study is made of the accidents occurring in the construction of the mammoth skyscrapers, particularly in the city of Chicago. The great majority of these accidents are caused by reason of the workmen becoming fatigued in climbing to the 10th, 15th and 20th stories of these skyscrapers.

When a workman is fatigued he has not the same control over his actions, his brain is more or less deadened, resulting in careless moves that endanger his life and the lives of his fellow-workers and the pedestrians on the street. At the present time, building trades workers must climb stairways and ladders to the highest point of the building, to begin work in the morning and to leave at noon, returning again at noon and leaving work at night and often extra trips for material or to answer the call of nature are necessary. Material elevators are operated in these buildings under construction. In the majority of the cases the contractor rents them from the elevator concerns at so much per day. The installation of an elevator to carry workmen means, the installation of a more approved type of elevator for these skyscrapers.

Section 5. We ask that section 5 of the present law be amended by striking out the words "or more" following the words "nor less than 16 feet". The presence of these words in the law destroys the intent and effect of section 5, therefore, the amendment to eliminate these words.

Section 7. An amendment to section 7 provides that all shaftways of elevating machines and hoisting apparatus shall be completely enclosed and protected in such a manner that no material falling off hoisting machine or elevator can fall off outside of the shaftway. This amendment is to protect hoistways so that no falling material or other substances can injure workmen or pedestrians.

A further amendment to this section provides that material hoists or elevators operated by horse or hand power shall be securely locked when not in operation. This provision is requested in order to insure against interference with such hoisting machines or elevators by children or others entering the building after workmen have left. Cost of compliance with this amendment would be very small. We have records of numerous accidents to children in this department. Accidents to children generally happen when they climb to the top of a double platform horse hoist on to the lifted hoist. The weight of several children is sufficient to send the hoist to the ground at terrific speed. There are no rails on these hoists, consequently when the hoist crashes to the ground floor, the children are either thrown off or else try to hold themselves on the hoist track or any projection, resulting in severe injury to the children. On one construction job four little boys were injured. The record states that, one boy broke his left leg and right ankle, the other injured his spine and broke his ankle, the third received internal injuries and lacerations of the face, and the fourth broke his ankle and injured his back. This accident happened on a Saturday afternoon after the workmen had left the building. Another accident occurred while a boy was playing with some companions about a hoist. This little fellow was pulling on the cable which released the dog. The platform started, catching this boy's hands between the sheave and rope, cutting off two fingers of the left hand. This accident happened after working hours and was due to an improperly protected hoist. These two examples will suffice to indicate the average accident report of children, while playing around or with these dangerous hoists.

(7b) The next amendment is a provision that all signal systems or bell-cords used in connection with operations of cranes, hoists or derricks shall be so enclosed and guarded that they cannot be interrupted or interfered with. The substance of this provision is now enforced, but the insertion of this specific language is requested for the information of the contractors.

Section 8a. Another amendment suggested is a creation of a new section known as section 8a, which in substance provides that beams or cross beams shall be so attached as to prevent accidents. Temporary connections are now made by the insertion of one bolt. Very often the iron tilts when a worker is passing over it. The effect of this provision would be to make necessary the insertion of two bolts. Two bolts would hold the beam absolutely secure and permit a man to walk on it without being tilted over.

Section 8b. Another provision to be known as 8b is suggested in order to provide safety scaffolds not more than 16 feet from the scaffold or other support on which the workmen are employed.

Another section to be known as section 8c, provides that on all buildings at least one toilet must be maintained for every five floors, as the building progresses. This is a sanitary provision of first importance. No toilet facilities are provided at present on large skyscrapers and the workmen must either come down from the top of the tenth, fifteenth, or twentieth story, as the case may be, or put the floor on which they are working in an unsanitary condition. Aside from the sanitary feature, lack of toilet facilities often lead workers to neglect the call of nature and constipation with all of its serious results follows. A temporary toilet system consisting of drain, water flush pipe and seat, can be installed in such a manner, that it will not interfere with the construction of the building and may be taken apart and used on the next job, similar to the method suggested in the following paragraph with reference to water pipes. The only expense involved, and one that is considerably small, would be the cost of pipes connecting same.

Section 8d. This section provides for drinking fountains on each floor of a building under construction. The need for these is apparent, when thought is given to the difficulty that attends workmen on buildings three to twenty-five stories in height leaving work in order to procure drinking water. Pipes could be run up on the side of the building with spigots on each floor for the purpose of furnishing the drinking water. These pipes can be readily disconnected and taken to the next construction job at very little expense.

Section 8e. Another new provision is to be known as section 8e and prohibits the use of gasoline in caissons and tunnel work. Gasoline is a dangerous element. There is no necessity for the use of gasoline in this work and it should be prohibited.

Section 9. An amendment to section 9 of the present law would correct the present penalty clause. If the amendment is adopted it will give a justice of the peace or a municipal court judge jurisdiction in these cases.

General. In the main the above amendments correct technical flaws of the present law, add some new provisions that are absolutely essential for the safety and protection of human life in the building industry. Many contractors now voluntarily make such provisions and it is only equitable that such provisions should be in the law in order that the humane contractor may not be at a disadvantage in bidding on work.

DANGER IN WELL DIGGING.

Numerous complaints to this department concerning the dangers in digging wells or caissons and the foundations of buildings have lead to an investigation as to the cause of accidents in this occupation.

In digging foundations for the skyscrapers accidents frequently have happened by reason of the cable slipping or accidentally being thrown off the driving sheave, which is operated on a so-called "tripod" over the well in which one, two or sometimes three men work. The result is that the bucket, filled with dirt and material weighing approximately six to seven hundred pounds, while being hoisted, drops very swiftly and without warning kills and injures the workmen at the bottom of the

well. This danger exists at all times and accidents will happen as long as contractors are permitted to operate these hoists in the present manner. To illustrate this great danger a case in point is here cited. The canvas covering over top of tripod was caught in cable, throwing cable off sheave, causing a slack in the cable which resulted in the sudden dropping of buckets simultaneously in six wells. All the men in the wells were injured, although escaping death. On another construction job a similar accident happened when a bag became tangled in the cable. In still another instance a teamster drove his horse along the cable and sheave. The horse's tail became entangled around the cable and the horse lunged forward suddenly, pulling the tripod over; the cables were thrown off the sheaves, causing the buckets in twelve wells to drop simultaneously. At another time a teamster backed his wagon against a cable, thereby pulling cable off the sheave with the result that the buckets which were almost at the top of the well fell and killed two men instantly.

The well diggers are threatened with injury and death by reason of the hauling rope on the niggerhead or spool "getting foul". In a case of this kind nothing can prevent the buckets from descending very rapidly and striking the men at the foot of the shaft. The enormous weight of a loaded bucket would prevent a workman at the mouth of the well from holding the rope.

CAISSON SAFETY DEVICES.

Accompanying this chapter is a series of photographs showing a number of caisson safety devices. These devices were subjected to a test under actual working conditions by the structural expert of this department. The requirements of the test were that the device be noiseless and work automatically.

Accidents, on account of lack of safety devices on niggerheads or spools, happen quite frequently. In one case a well digger had his arms crushed by a falling bucket, because the hauling rope on the niggerhead could not be controlled. In another instance a well digger was injured when the hauling rope got foul of the niggerhead, the well at that time being 100 feet deep. The bucket loaded with stones was within 20 feet of the top when it plunged down the well.

The building code of Chicago directs that the foundations of skyscrapers must rest on rock bed or a distance of from 90 to 115 feet below the street surface. During the process of digging these wells water is constantly seeping through the earth. Pumps operated by steam are lowered automatically as the well becomes deeper. These pumps force up the accumulation of water. The danger to the well diggers in this instance consists of rubber hose to convey steam. Rubber hose for this purpose is entirely inadequate and dangerous, being liable to burst without warning at any time after usage of a month. The men at the bottom of the shaft which is usually from 4 to 9 feet in diameter have no means of escape and must remain in danger of being boiled alive. Accidents of this nature have frequently happened in the past.

In order to do away with this horrible condition, this department has prohibited the use of rubber hose and has ordered that all rubber hose be replaced by metallic copper double interlocking hose. However, on account of the copper becoming extremely heated by the steam, it is

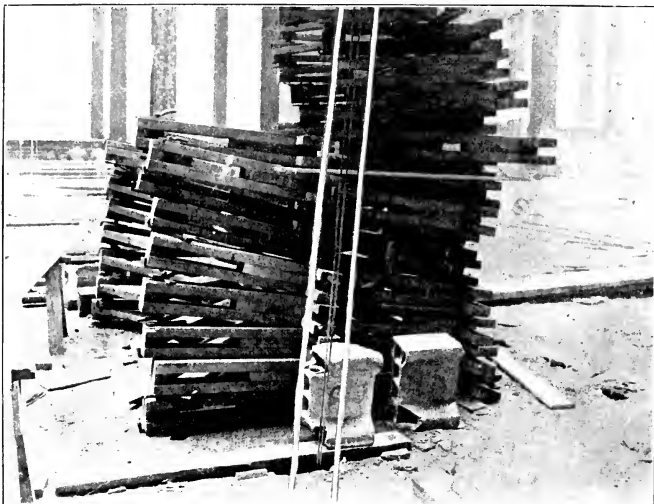


Illustration No. 51. Exposed signal cords running from hoisting crane to hoisting engineer. The cords are between the two white lines. Note the danger here. Should any of the boards on this floor fall and strike the cords a wrong signal would be received by the engineer below, which, in many cases, has resulted in serious accidents. This department orders all cords placed within pipes.

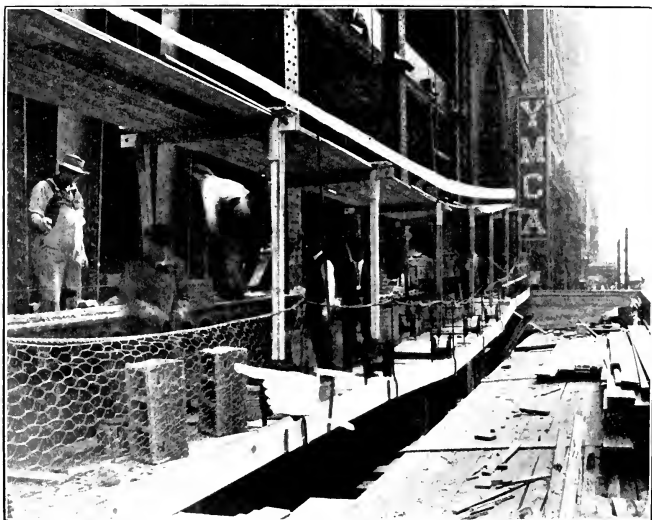


Illustration No. 52. Scaffold of approved type. Note canopy top and wire mesh sides. The top prevents injuries to men when material falls from the floors above. The inclosed sides prevent men from falling or material on the scaffold from dropping down on pedestrians.

suggested that a cover of asbestos or thick canvas be placed around the metal hose.

Another source of great danger and one that has resulted in the death of many well diggers is due to gas accumulating at the bottom of the wells. After the workmen have been lowered in the buckets they are frequently overcome by gas and the rescuers usually meet the same fate.

To eliminate "gassing" this department has ordered that all wells 50 feet or more in depth must be provided with an exhaust suction or compressed air system. The exhaust or suction system serves the purpose of drawing out all foul air and gases, while the compressed air is often employed in cases where the foul air is not very heavy and can be

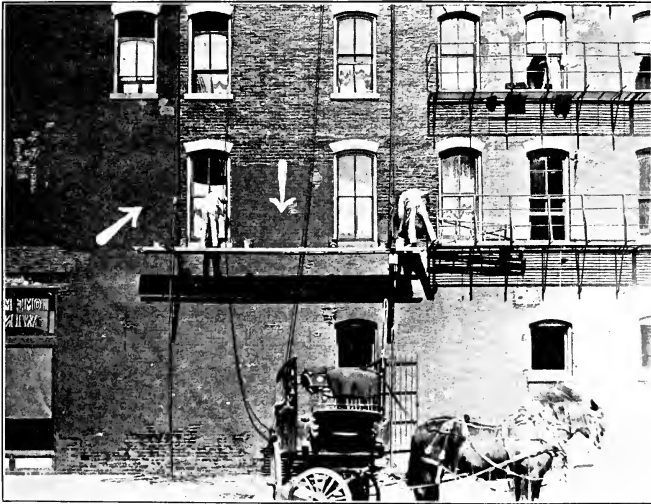


Illustration No. 53. The arrows point to a scaffold without safety rail. Note the dangerous condition to the men and the fashion in which they must hold some object on the building to prevent falling or swinging of scaffold.

forced to rise to the surface. All wells must be supplied with fresh air and have the gases pumped out before permitting workmen to go to the bottom. Fans or exhausts must be in operation at least one hour before starting work.

It is further suggested that contractors provide a helmet similar to the kind employed by the City Fire Department for the use of rescuers, to prevent them from being overcome by gas.

While in a well about 80 feet deep two well-diggers were killed by gas. The circumstances in the case were as follows: one of the men returning from lunch went down the well. In a few moments he was overcome by gas, which had accumulated since he had gone to dinner.

A fellow workman went down to bring the other up, but was overcome himself and died. The department has the record of another death by gas in a well approximately 80 feet deep. In another instance, a work-

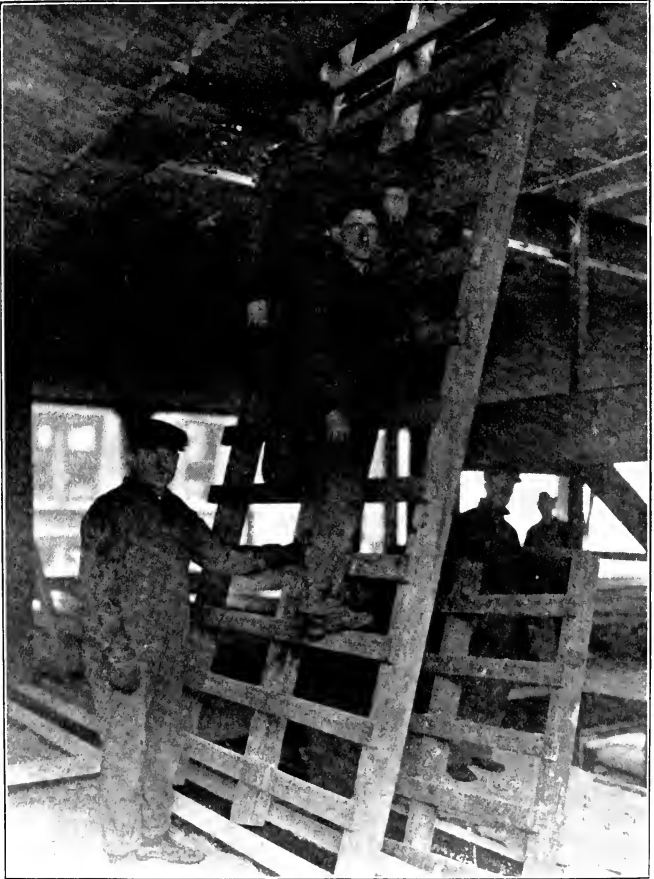


Illustration No. 54. Old method of stairs for the use of employees on structures. Note the small floor openings through which the men must squeeze in climbing from floor to floor. Compare illustration No. 55.

man, while standing in a bucket during the process of being hauled up, had been lifted up about 30 feet out of an 80 foot well. He was overcome by gas and fell out of the bucket to his death.

Not only do these gases kill by inhalation, but very often explosions occur which result fatally. One case shows that an explosion killed two men who, on return from their lunch hour, attempted to light a candle at the bottom of the well. The gas which had accumulated during the lunch hour exploded, killing both men. In another instance, two men were severely burned in the explosion of well gas. At the time this well was supplied with electric lights. Another case is recorded where two men were rendered helpless for life: both men had descended to the

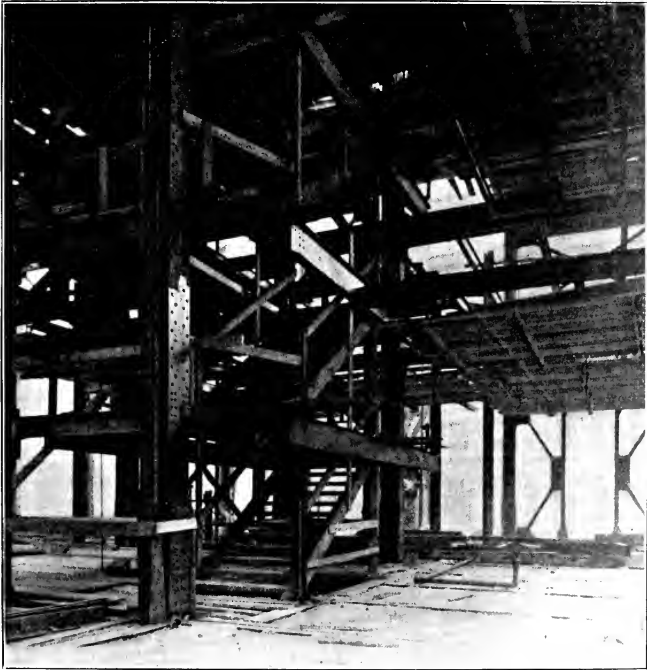


Illustration No. 55. Approved temporary stairs in a skyscraper under construction. Compare illustration No. 54.

bottom of a 70 foot well and commenced to dig; the pick of one of the men struck a stone causing a spark which ignited the gas. In still another case a well digger was disfigured and crippled for life. His shovel struck against the bucket, created a spark, which caused an explosion.

Each well should be provided with a direct and efficient signal cord to the engineer, so that in case of danger the signal may be sounded and the engine promptly stopped.

In addition to these causes of accidents just mentioned, we find that worn out ropes affected by so-called "dry rot" endanger the lives of men. Frequent inspection by the contractors of sheaves, keys holding driving sheaves or niggerheads, buckets and rivets on the handles of buckets, would insure greater safety to the workingmen. This department recommends that gib keys and pins through the shaft be used in place of ordinary keys.

The Caisson safety devices referred to previously are the following:

A. Thomas Caisson Safety Device, manufactured by the Thomas Elevator Co., 20 South Hoyne Avenue, Chicago, Ill. This device is provided with a safety brake which operates independently from the rest of the



Illustration No. 56. Material hoist or elevator shaft open on all sides. Note absence of means to prevent men or material from falling down shaft. Compare with illustration No. 57.

mechanism. A downward stroke of the handle makes it possible to bring the entire apparatus over any one well to a standstill, particularly in such cases, when the line gets foul on spool or niggerhead.

B. Carpenter Caisson Safety Device, manufactured by Geo. B. Carpenter & Co., 430 Wells Street, Chicago, Ill. This device is entirely encased, so that water and dirt cannot enter the mechanical parts.

C. French & Allen Safety Device, manufactured by French & Allen, 506 South Canal Street, Chicago, Ill. The brake can be adjusted readily from one side to the other, when it is necessary to drive the shaft in the opposite direction.

FREE FIRST AID MEDICAL SERVICE.

During the session of the Forty-ninth General Assembly, House Bill No. 668 was introduced, but failed to become a law. This bill

provided that all licensed druggists, physicians and hospitals render first aid medical service, and in cases where the employer was not under the "Workmen's Compensation Act" and refused to pay the druggist, physician or hospital rendering first aid medical service, the duty of granting reasonable compensation for such service devolves upon the county board.

Such a law is necessary for the reason that very often an employee is injured in the absence of his employer and is taken to the hospital, drug store or doctor's office; but because the fellow employee accompanying him cannot guarantee to the hospital, doctor or druggist compensation for their services, medical service for the injured person is refused.

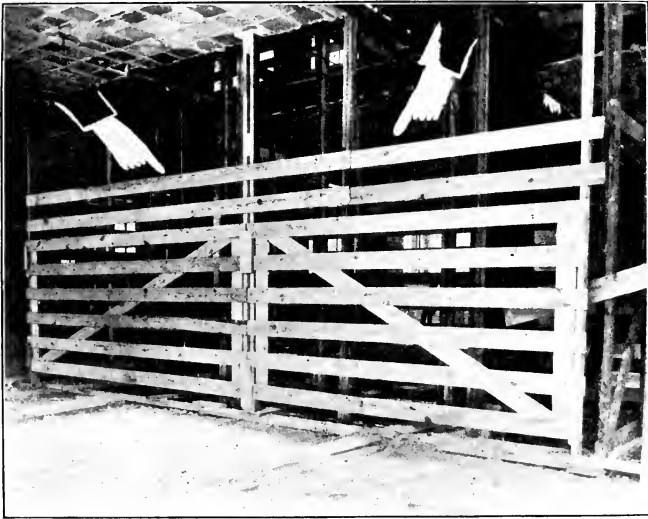


Illustration No. 57. Material hoist or elevator shaft properly guarded by strong fence eight feet high readily removable when material arrives at floor landing. Compare illustration No. 56.

In many cases of accident in Chicago men injured in the course of their employment have been carted around in police ambulances from three to four hours from one hospital to another, simply because no one could guarantee the hospital that the bills of the injured person would be paid,

The bill provided that such service must be rendered and guarantees compensation to druggists, doctors, or hospitals. It is a measure that is both equitable and humane in its provisions.

If the State wants to assume the part of the good Samaritan, which it should, then without hesitation this bill ought to be enacted at the next or fiftieth session of the General Assembly.

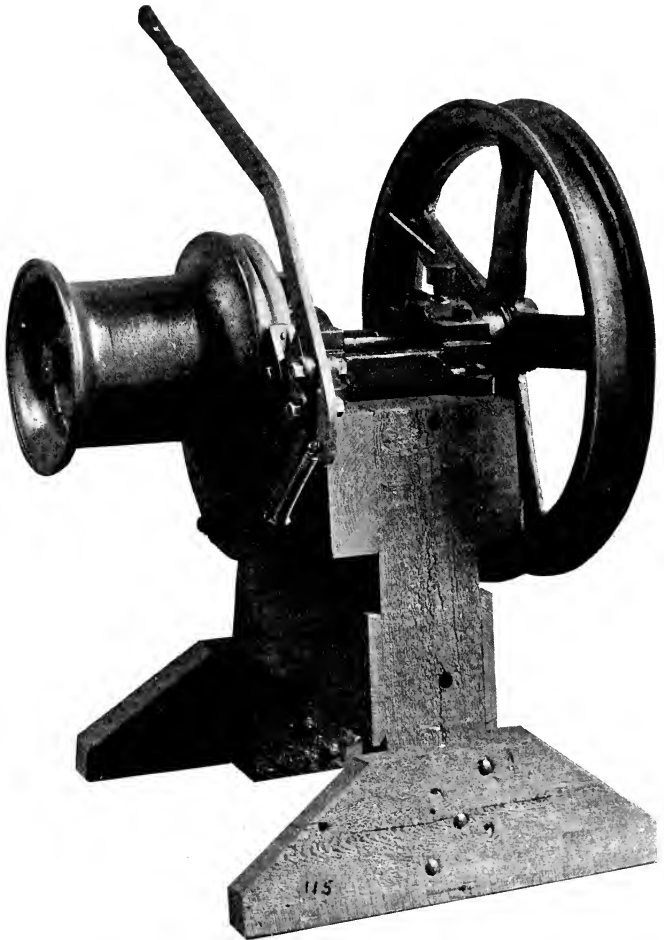


Illustration No 58. Thomas Caisson Safety Device. Note safety brake which operates independently from rest of mechanism and makes it possible to bring entire apparatus over any one well to standstill.

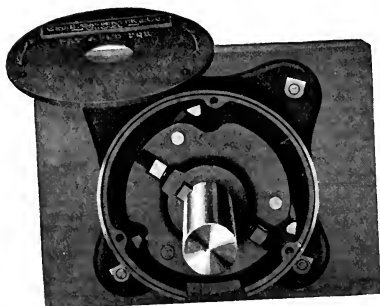
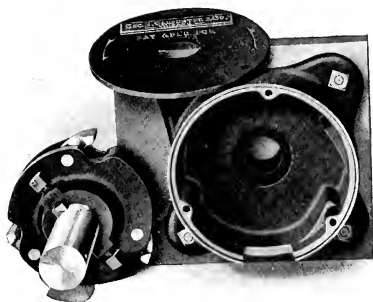
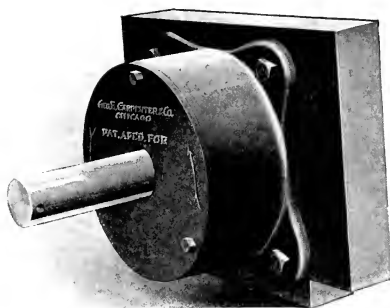


Illustration No. 59. Carpenter Caisson Safety Device. The three pictures show this device in all its parts. It is noiseless and works automatically.

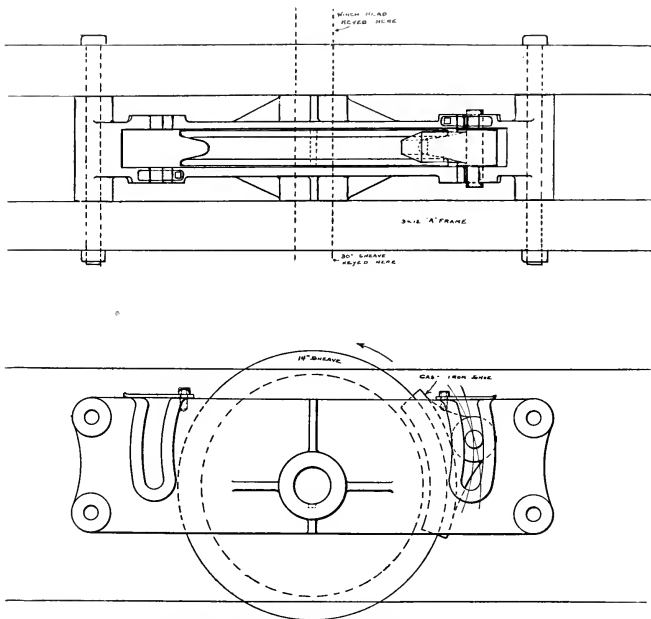


Illustration No 60. French and Allen Caisson Safety Device. One of the features of this device is that the brake can readily be adjusted from one side to the other when necessary to drive shaft in opposite direction.

RESULTS OF INSPECTIONS ACCORDING TO THE "WOMEN'S TEN-HOUR LAW."

The "Women's Ten-Hour Law" became effective July 1, 1911, and amended the Act of 1909.

The present law regulates and limits the hours of employment of females in mechanical or mercantile establishments, in factories, in laundries, in hotels and restaurants, in telegraph and telephone establishments, in places of amusement, in the express, transportation and public utility business, and applies to any common carrier or any public institution incorporated or unincorporated.

The important items of the law are:

(1) No female shall be required to work more than 10 hours in any one day;

(2) The employer of female help must keep a time record, showing for each day of labor the hours during which female help is employed.

On account of the strict enforcement of this law during the preceding year, when 346 prosecutions instituted by this department terminated in convictions, the general observance of this law is fairly satisfactory. The number of cases of over "ten-hour-violations" has diminished, be-

cause employers have become acquainted with the law and because they know that this department insists upon a strict compliance. The cases of employers failing to keep time records as provided for in section 5 of the law are still numerous, though on the decline.

Two kinds of time records are acceptable to this department: a daily schedule showing the hours of each female employee in writing, or a time clock which punches the exact hour and minutes. Time clocks which show the time by perforation, dash, star, or other sign will not be considered.

The question has often been raised of how long a time employers should preserve these time records. The department has always advised employers to keep a continuous record on file for a period of six months.

In many cases employers engage female help only during certain seasons of the year. In such cases it is advisable that the employer indicate on his record the periods for which no female help was employed. This will avoid numerous questions, when the deputy inspector examines the time records.

The following table shows the inspection work according to the provisions of this law:

TABLE NO. 1—INSPECTIONS UNDER WOMEN'S TEN HOUR LAW.
Comparative for the years July 1, 1913 to June 30, 1914 and July 1, 1914 to June 30, 1915.

Location.	Year.	Number of establishments inspected.	Number of inspections.	Number of employees			Per cent of women.
				Total.	Males.	Females.	
Chicago and Cook County...	1914-15	8,958	10,904	250,643	167,788	82,855	33
	1913-14		13,002	515,503	322,223	193,280	38
Outside of Cook County.....	1914-15	4,033	5,853	94,472	73,999	20,473	22
	1913-14		2,967	124,030	92,675	31,355	25
Total entire State.....	1914-15	12,991	16,757	345,115	241,787	103,328	29
	1913-14		*20,418	639,533	414,898	224,635	35

* Includes second inspections.

This table shows that 16,757 inspections were made in 12,991 establishments located in the various parts of the State. Of this total number, 10,904 inspections are recorded as having been made in 8,958 places of business located in Chicago and Cook County. Outside of Cook County, 5,853 inspections in 4,033 places of employment are credited to the work of this department. While the number of inspections under this law is less than last year in the city of Chicago and Cook County, the number of inspections in cities and towns outside of Cook County almost doubled.

Table No. 2 presents in statistical form the number of establishments visited in Cook County and the number of inspections, together with the number of male and female employees over 16 years of age. The table is divided into ninety-two industrial classifications, with the percentage of female employees indicated.

In 1,614 instances second inspections were necessary, in 284 cases third inspections were required, 39 establishments were inspected four times, 8 five times and 1 six times.

In Chicago and Cook County the percentage of female help amounts to 33.06 per cent. The industries in which female employees predominate, follow:

	Per cent.		Per cent.
Five and ten cent stores.....	90.87	Cigars and tobacco wholesale..	60.13
Hair dressing.....	86.49	Rubber goods.....	58.83
Wholesale dry goods.....	77.97	Clothing	56.56
Embroideries	76.79	Department stores.....	56.42
Laundries	74.9	Restaurants	53.3
Telegraph and telephone offices	74.04	Paper boxes.....	52.29
Hats and caps.....	70.39	Retail dry goods.....	50.62
Millinery	69.88	Confections	50.45
Gloves and mittens.....	66.19		

Without exception, the above mentioned 17 industries having a preponderance of female employees are such as are commonly known to be in favor of hiring more women than men.

TABLE NO. 2—RESULTS OF INSPECTIONS ACCORDING TO THE WOMEN'S TEN HOUR LAW IN CHICAGO AND COOK COUNTY.

July 1, 1914, to June 30, 1915.

Industry.	Number of establishments.	Number of inspections.						Number of employees.				Per cent of females to total employed.
		Total.	One.	Two.	Three.	Four.	Five.	Six or over.	Total.	Males.	Females.	
Amusements, places of.....	9	9	9						929	516	413	44.46
Art goods.....	59	69	59	7	2	1			970	642	328	33.81
Autos, garages, etc.....	79	91	79	9	3				3,641	3,527	114	3.13
Bakeries.....	543	636	543	75	13	3	2		4,695	3,038	1,657	35.29
Banks, bankers, loans, insurance, etc.....	5	5	5						61	43	18	29.51
Barbers.....	5	6	5	1					344	336	8	2.32
Boots and shoes (manufacturing and wholesale)	18	33	18	8	3	2	2		2,775	1,805	970	34.96
Boots and shoes (retail).....	22	25	22	3					599	503	96	16.03
Brewers and bottlers.....	21	26	21	5					3,053	2,984	69	2.26
Brick, stone, terracotta, etc.	21	25	21	2	1	1			2,378	2,359	19	.8
Brooms, brushes, dusters, etc.....	16	19	16	3					464	371	93	20.04
Butter, eggs and cheese (retail).....	11	11	11						115	84	31	26.96
Butter, butterine (manufacturing and wholesale)	8	10	8	2					925	701	224	24.22
Buttons.....	11	14	11	2	1				226	124	102	45.13
Carriages, wagons and trucks.....	7	14	7	4	2	1			1,282	1,265	17	1.33
China, crockery and glassware.....	14	20	14	5	1				80	49	31	38.75
Cigars, cigarettes, tobacco (wholesale and manufacturing)	54	59	54	5					1,638	653	985	60.13
Cigars, cigarettes, tobacco (retail).....	41	47	41	5	1				1,143	647	496	43.4
Cleaning and dyeing.....	121	158	121	31	6				1,153	678	475	41.2
Clothing.....	408	460	408	49	3				8,264	3,590	4,674	56.56
Coal, grain, hay, feed, etc.....	47	55	47	6	2				1,844	1,819	25	1.36
Commission merchants.....	69	71	69	2					1,031	913	118	11.44
Confectioners.....	289	345	289	44	12				6,943	3,440	3,503	50.45
Dental and medical laboratory supplies.....	25	34	25	8	1				440	236	204	46.36
Department stores.....	42	76	42	25	5	2	1	1	29,484	12,850	16,634	56.42
Druggists (retail).....	81	96	81	11	4				835	798	37	4.43
Druggists (wholesale).....	22	27	22	4	1				797	504	293	36.76
Dry goods (retail).....	389	478	389	79	10				3,668	1,811	1,857	50.62
Dry goods (wholesale).....	4	7	4	2	1				808	745	63	7.79
Educational institutions.....	25	28	25	2	1				2,464	1,146	1,318	53.49
Electrical goods.....	53	58	53	4	1				1,077	859	218	20.24
Embroideries.....	26	33	26	6	1				349	81	268	76.79

TABLE NO. 2—Concluded.

Industry.	Number of es- tablishments.	Number of inspections.						Number of employees.				
		Total	One.	Two.	Three.	Four.	Five.	Six and over.	Total.	Males.	Females.	Per cent of fe- males to total employed.
Express and storage.....	29	33	29	4					317	304	13	4.1
Five and ten cent stores....	131	174	131	36	6	1			997	91	906	90.87
Florist.....	39	48	39	6	2	1			368	296	72	19.57
Furniture.....	172	214	172	36	6	1			2,723	2,482	241	8.85
Furriers.....	51	59	51	8					279	173	106	37.99
Gas and electric companies.	7	7	7						1,604	1,318	286	17.83
Gas and electric fixtures....	43	55	43	10	2				956	775	181	18.93
Glass.....	30	36	30	5	1				474	458	16	3.37
Gloves and mittens.....	18	24	18	6					772	261	511	66.19
Groceries and markets (re- tail).....	382	429	382	45	2				4,018	3,060	958	23.84
Groceries and markets (wholesale).....	85	88	85	3					3,417	2,481	936	27.39
Hair dressing and manicur- ing.....	112	118	112	6					496	67	429	86.49
Hardware.....	69	101	69	29	3				1,772	1,601	171	9.65
Hats and caps.....	46	48	46	2	1				466	138	328	70.39
Hotels and rooming houses.	108	122	108	13	1				3,834	2,103	1,731	45.15
Junk dealers.....	20	21	20	1					205	181	24	11.71
Jewelers.....	191	276	191	65	15	4	1		2,251	1,887	364	16.17
Laundries.....	251	401	251	113	32	4	1		5,514	1,384	4,130	74.9
Leather goods.....	45	56	45	9	2				2,229	2,006	223	10.
Livery, boarding and sale stables.....	6	7	6	1					652	651	1	.15
Lumber yards and planing mills.....	47	58	47	10	1				1,838	1,817	21	1.14
Mail order houses.....	29	45	29	12	3	1			22,291	11,571	10,720	48.09
Men's furnishings.....	25	33	25	7	1				556	514	42	7.55
Metal working trades.....	457	598	457	111	25	5			27,263	24,682	2,581	9.47
Milk dealers.....	19	23	19	3	1				747	738	9	1.2
Millinery.....	48	57	48	8	1				2,354	709	1,645	69.88
Music.....	18	20	18	2					349	308	41	11.75
Newspapers, periodicals....	23	24	23	1					1,153	1,039	114	9.87
Offices.....	307	325	307	17	1				4,998	2,731	2,267	45.36
Packers.....	32	36	32	4					3,637	3,121	516	14.19
Painters, decorators.....	24	38	24	4					469	438	31	6.6
Paints, oils, varnishes etc..	80	99	80	17	2				1,741	1,376	365	20.96
Paper, paper boxes and bags	68	89	68	17	4				2,446	1,167	1,279	52.29
Physicians and surgeons....	1	1	1						6	4	2	33.33
Photographs.....	59	67	59	6	2				617	424	193	31.28
Pianos, organs, musical in- struments.....	65	84	65	17	2				2,726	2,432	294	10.78
Plumbers, etc.....	59	65	59	6					2,078	1,966	112	5.39
Printers, publishers, en- gravers.....	460	592	460	98	28	6			10,807	8,460	2,347	21.72
Railroads, steamships, transportation.....	37	42	37	4	1				5,528	5,450	78	1.41
Restaurants.....	1,295	1,559	1,295	223	35	5	1		8,980	4,194	4,786	53.3
Roofers.....	10	12	10	1	1				172	163	9	5.23
Rubber goods.....	16	20	16	3	1				1,047	431	616	58.83
Shoe shining and repairing.	3	4	3	1					29	28	1	3.45
Signs.....	13	14	13	1					368	346	22	5.98
Soaps, washing powder, etc.	23	31	23	6	2				1,807	1,316	491	27.12
Sporting goods.....	13	18	13	2	2	1			1,233	892	341	27.66
Stationers, books, etc.....	78	91	78	12	1				1,756	1,133	623	35.48
Stores, salesrooms, miscel- laneous.....	219	256	219	35	2				1,948	1,301	647	33.21
Surgical instruments.....	11	14	11	3					353	285	68	19.26
Teas, coffees, etc.....	238	315	238	68	9				1,509	895	614	40.69
Telegraph and telephone offices.....	41	47	41	5	1				2,519	654	1,865	74.04
Tents, awnings, etc.....	33	40	33	7					1,029	740	289	28.09
Theaters.....	17	18	17	1					404	272	132	32.67
Theaters, five and ten cent.	37	40	37	2	1				497	371	126	25.35
Unclassified.....	458	519	458	56	5				11,000	8,585	2,415	21.95
Undertakers.....	2	4	2	1	1				100	92	8	8.
Upholsterers.....	35	38	35	3	1				306	261	45	14.7
Warehouses.....	52	61	52	7	2				1,159	1,144	15	1.29
Wines and liquors.....	12	13	12	1					107	91	16	14.95
Woodworking trades.....	114	142	114	25	2	1			4,897	4,813	84	1.72
Total.....	8,958	10,904	8,958	1,614	284	39	8	1	250,643	167,788	82,855	33.06

During the past year 186 cities and towns outside of Cook County, as against 135 during the preceding year, were visited by our deputy inspectors for the purpose of enforcing the provisions of the "Women's Ten-Hour Law".

The following table shows the number of establishments in the various cities and towns outside of Cook County and the number of inspections made in each town, together with the number of employees found at work in the various establishments visited:

TABLE NO. 3—SUMMARY OF INSPECTIONS—WOMEN'S TEN HOUR LAW—CITIES OTHER THAN CHICAGO.

July 1, 1914, to June 30 1915.

City.	Number of establishments	Number of inspections.	Total.	Males.	Females.
Abingdon.....	17	19	374	313	61
Algonquin.....	1	1	20	12	8
Altamont.....	2	2	32	31	1
Alton.....	18	19	263	204	59
Amboy.....	13	14	103	71	32
Anna.....	20	27	136	109	27
Arcola.....	10	10	122	104	18
Area.....	8	8	25	16	9
Assumption.....	12	12	129	111	18
Aurora.....	27	34	1,233	612	621
Bartonville.....	6	6	34	26	8
Beardstown.....	4	4	38	12	26
Belleville.....	24	24	1,677	1,431	246
Belvidere.....	48	66	1,794	1,576	218
Benton.....	22	22	233	191	42
Bloomington.....	205	291	5,470	4,361	1,109
Bradley.....	4	4	461	437	24
Brookport.....	2	2	32	31	1
Bunkerhill.....	5	5	38	32	6
Byron.....	4	4	89	68	21
Cairo.....	100	140	1,673	1,435	238
Canon.....	55	61	1,471	1,252	219
Capron.....	2	4	38	36	2
Carbondale.....	26	36	150	78	72
Carlinville.....	16	18	144	113	31
Carrollton.....	12	12	118	92	26
Carterville.....	11	11	97	68	29
Carey.....	1	1	13	12	1
Casey.....	19	19	117	93	24
Centralia.....	72	98	1,442	1,158	284
Chadwick.....	1	1	3	1	2
Champaign.....	54	61	1,064	708	356
Charleston.....	32	32	468	410	58
Chemung.....	1	2	163	100	63
Chillicothe.....	14	23	123	84	39
Chrisman.....	7	7	46	36	10
Coal City.....	4	4	121	103	18
Collinsville.....	13	13	199	61	138
Crystal Lake.....	10	13	114	92	22
Decatur.....	193	333	4,582	4,081	501
Danville.....	117	263	3,803	2,961	842
Dekalb.....	41	41	1,596	1,403	193
Delavan.....	7	7	101	86	15
Depue.....	7	7	904	891	13
Dixon.....	69	87	1,580	1,259	321
Dundee.....	10	14	149	126	23
Duquoin.....	1	1	54	51	3
Dwight.....	10	10	38	24	14
East Alton.....	1	1	110	107	3
East Peoria.....	7	11	392	371	21
Edwardsville.....	10	11	82	62	20
Effingham.....	27	27	293	242	51
Eldorado.....	13	14	761	748	13
Elgin.....	12	16	457	181	276
Elizabethtown.....	2	2	16	14	2
Elmwood.....	11	11	63	51	12
Eola.....	1	1	18	13	5
Fairfield.....	12	12	461	207	254

TABLE NO. 3—Continued.

City.	Number of establish- ments.	Number of Inspec- tions.	Total.	Males.	Females.
Flora.....	15	15	118	92	26
Forreston.....	7	7	26	9	17
Freeport.....	12	12	137	51	86
Fulton.....	19	24	225	191	34
Galena.....	38	51	409	307	102
Galesburg.....	171	292	3,509	2,761	748
Geneseo.....	1	1	140	113	27
Genoa.....	8	12	142	104	38
Georgetown.....	3	3	15	12	3
Glencoe.....	1	1	5	4	1
Golconda.....	5	5	42	36	6
Greenup.....	7	7	52	42	10
Greenville.....	21	21	441	243	198
Hampshire.....	2	3	53	41	12
Hanover.....	1	2	42	24	18
Harrisburg.....	27	29	975	935	40
Harvard.....	20	20	304	258	46
Havana.....	4	4	19	6	13
Henry.....	17	31	120	84	36
Highland.....	13	13	355	273	82
Hillsboro.....	27	27	915	842	73
Hoopeston.....	21	21	396	305	91
Jacksonville.....	26	26	377	143	234
Joliet.....	9	9	367	111	256
Jonesboro.....	5	5	35	27	8
Kankakee.....	28	29	1,245	737	508
Kewanee.....	7	7	180	66	114
Knoxville.....	9	9	46	32	14
Lacon.....	10	10	175	127	48
Lake Forest.....	2	2	21	5	16
Lanark.....	7	7	30	13	17
La Salle.....	39	45	1,354	1,151	173
Lemont.....	1	1	97	83	14
Libertyville.....	9	9	127	96	34
Lincoln.....	16	16	125	48	77
Litchfield.....	30	30	522	464	58
Mackinaw.....	4	4	28	23	5
Marengo.....	11	11	47	31	16
Marion.....	26	28	219	147	72
Marselles.....	14	20	371	338	33
Marshall.....	19	21	231	186	45
Martinsville.....	10	10	95	84	11
Mattoon.....	60	61	883	746	137
McHenry.....	1	1	3	3	
Metropolis.....	18	18	456	388	68
Millford.....	3	3	52	47	5
Milledgeville.....	5	5	10	5	5
Moline.....	11	11	516	81	435
Momence.....	2	2	94	93	1
Morris.....	19	19	1,223	1,164	59
Morrison.....	28	38	180	151	29
Morton.....	1	1	34	29	5
Mound City.....	12	12	224	210	14
Mounds.....	11	12	150	128	22
Mt. Carmel.....	27	27	437	394	43
Mt. Carroll.....	4	4	19	8	11
Mt. Morris.....	5	5	96	63	33
Mt. Olive.....	1	1	4	1	3
Mt. Vernon.....	3	3	28	13	15
Murphysboro.....	41	53	412	218	194
Neoga.....	9	9	59	48	11
Newton.....	11	11	99	78	21
Nokomis.....	11	11	34	22	12
Normal.....	6	6	42	35	7
North Chicago.....	15	17	126	119	7
Oakland.....	6	6	70	56	14
Oglesby.....	2	2	750	742	8
Olney.....	33	33	227	146	81
Onarga.....	1	1	188	164	24
Oregon.....	12	12	307	286	21
Ottawa.....	67	105	1,465	1,147	318
Pana.....	3	3	255	191	64
Paris.....	42	52	711	618	93
Paxton.....	14	14	158	127	31
Pekin.....	19	27	473	414	59
Peru.....	17	17	2,008	1,602	406

TABLE NO. 3—Concluded.

City.	Number of establish- ments.	Number of inspec- tions.	Total.	Males.	Females.
Petersburg.....	4	4	21	2	19
Pistakee.....	1	1	17	10	7
Plano.....	10	11	176	164	12
Polo.....	10	10	49	21	28
Pontiac.....	25	32	530	374	156
Princeton.....	1	1	27	18	9
Prophetstown.....	9	11	49	38	11
Peoria.....	634	1,430	12,960	9,070	3,890
Rantoul.....	4	4	14	6	8
Ravinia.....	2	2	45	27	18
Richmond.....	2	2	8	6	2
Robinson.....	16	16	219	184	35
Rochelle.....	14	18	194	159	35
Rockford.....	99	230	6,609	5,701	908
Rock Falls.....	16	24	780	732	48
Rock Island.....	10	11	575	165	410
Roseville.....	6	6	35	18	17
Salem.....	23	23	286	244	42
Sandoval.....	4	4	30	24	6
Sandwich.....	10	10	317	291	26
Savanna.....	40	45	462	400	62
Shawneetown.....	3	3	25	18	7
Shelbyville.....	23	23	233	177	56
South Beloit.....	3	3	237	140	97
South Pekin.....	3	3	150	146	4
Sparland.....	4	4	23	16	7
Spring Valley.....	13	13	125	84	41
St. Anne.....	1	1	75	37	38
Staunton.....	1	1	4	3	1
Sterling.....	66	87	1,182	888	294
Stickney.....	1	1	100	99	1
Stockton.....	12	14	116	102	14
Streator.....	62	68	2,361	1,952	409
Sullivan.....	12	12	140	114	26
Sycamore.....	23	23	325	239	86
Taylorville.....	40	42	479	371	108
Tower Hill.....	3	3	37	26	11
Tucker.....	1	1	4	2	2
Tuscola.....	18	18	219	165	54
Union.....	4	8	59	52	7
Urbana.....	20	24	583	474	109
Utica.....	2	2	72	67	5
Vienna.....	2	2	24	16	8
Viriden.....	8	8	76	53	23
Warren.....	15	19	88	66	22
Washington.....	6	6	202	164	38
Waukegan.....	15	22	1,744	1,451	293
Winnetka.....	1	1	3	2	1
Woodstock.....	23	32	525	460	65
Yates City.....	2	2	12	6	6
Yorkville.....	3	3	14	7	7
Zion City.....	8	8	580	178	402
Total.....	4,033	5,853	94,472	73,999	20,473

RESULTS OF INSPECTIONS ACCORDING TO THE PROVISIONS OF THE GARMENT LAW.

The law regulating the manufacture of clothing, wearing apparel and other articles was placed in force July 1, 1893, and prohibits the manufacture of coats, vests, trousers, knee-pants, overalls, cloaks, skirts, ladies' waists, purses, feathers, artificial flowers, or cigars in any room used for eating or sleeping purposes in any tenement or dwelling house, except by the family of the tenant. Every workshop must be clean and sanitary and free from vermin and contagious matter. All firms sending work to home workshops must keep and furnish a list of the location of

such home shops to the State Board of Health and to the State Factory Inspector.

The Board of Health or the Department of Factory Inspection must inspect these shops and if any contagious diseases are present all goods or materials in the workshop must be destroyed.

If goods or materials in a contaminated condition are transported to this State, the Board of Health must destroy it.

The terms, factory, workshop, and manufacturing establishments, are defined to mean any place where goods are made in whole or in part, or repaired, darned or sorted for sale or for wages. Places under this description are open to inspectors. A complete list of such home shops must be produced by the employer upon demand of the factory inspector.

The following table gives the number of establishments inspected according to the provisions of this law. The various establishments have been thrown into industrial classifications. The successive inspections necessary in the course of the year are presented with the number of employees for each industrial group.

The table presents 26 industries. Two thousand four hundred and eighty-three inspections were made in 1,626 establishments which employed a total of 41,729 persons. Five hundred and seventy-two second inspections were made. In 137 instances reinspections were necessary for the third time. Seventy-seven inspections were on fourth visit, and 71 inspections were made the fifth time in the course of the year.

The number of girls 14 to 16 years old employed in the 1,626 establishments is 533. Boys are evidently not desired or are less useful than girls, a comparison showing that 350 fewer boys than girls were employed.

TABLE NO. 1—INSPECTIONS ACCORDING TO AN ACT TO REGULATE THE MANUFACTURE OF CLOTHING, WEARING APPAREL AND OTHER ARTICLES—CHICAGO AND COOK COUNTY.

July 1, 1914, to June 30, 1915.

Industry.	Number of establishments.	Number of inspections.					Number of employees.					Per cent of children to total employed
		Total.	First.	Second.	Third.	Fourth.	Total.	Males over 16.	Females over 16.	Boys 14 to 16.	Girls 14 to 16.	
Aprons.....	13	17	13	4	.....	.....	891	132	745	.....	14	1.6
Artificial flowers.....	9	14	9	3	1	1	134	41	88	.....	5	3.7
Cigars.....	30	33	30	3	.....	.....	206	153	48	3	2	2.4
Cleaners, etc.....	384	426	384	39	2	1	1,193	6,789	397	7	.....	.6
Clothing, men's.....	299	802	299	353	83	42	13,144	6,785	6,255	21	83	.8
Clothing, men's coats.....	130	153	130	20	3	.....	7,581	3,596	3,792	80	113	2.5
Clothing, trousers.....	103	126	103	20	2	1	3,501	1,207	2,198	12	84	2.7
Clothing, vests.....	50	67	50	13	4	.....	2,849	1,001	1,799	12	37	1.7
Clothing, women's.....	21	88	21	21	19	16	644	369	272	2	1	.5
Clothing, skirts.....	25	32	25	7	.....	.....	659	202	450	5	2	1.1
Clothing, cloaks.....	96	119	96	21	2	.....	1,384	838	541	4	1	.4
Clothing, dresses.....	15	95	15	15	15	35	2,141	503	1,625	5	8	.6
Clothing, waists.....	11	15	11	4	.....	.....	208	43	160	.....	5	2.4
Knee pants.....	13	20	13	5	2	.....	276	141	132	3	.....	1.1
Overalls.....	8	13	8	4	1	.....	139	58	80	1	.....	.7
Men's furnishings.....	36	39	36	3	.....	.....	534	330	198	2	4	1.1
Women's furnishings.....	20	22	20	2	.....	.....	721	183	524	.....	14	1.9
Corsets.....	7	12	7	3	1	1	2,003	238	1,643	10	112	6.1
Furs.....	19	21	19	2	.....	.....	899	609	284	4	2	.7
Ornaments, etc.....	6	6	.....	.....	.....	.....	143	18	124	1	.....	.7

TABLE NO. 1—Concluded.

Industry.	Number of establishments.	Number of inspections.					Number of employees.					Per cent of children to total employed.
		Total.	First.	Second.	Third.	Fourth.	Total.	Males over 16.	Females over 16.	Boys 14 to 16.	Girls 14 to 16.	
Knit goods.....	20	26	20	6	.....	.....	459	127	323	2	7	2.0
Infants' clothing.....	5	5	5	.....	.....	.....	123	31	89	2	1	2.4
Raincoats.....	3	4	3	1	.....	.....	43	30	13	.....	.....	.....
Repairing.....	105	107	105	2	.....	.....	195	150	45	.....	.....	.....
Hats and caps.....	29	31	29	2	.....	.....	709	287	405	5	12	2.4
Millinery.....	169	190	169	19	2	.....	950	219	703	2	26	2.9
Total.....	1,626	2,483	1,626	572	137	77	41,729	18,080	22,933	183	533	1.7

Table No. 2 shows the inspections made in cities outside of Cook County. This is the first time in the history of the department that inspection under this law have been made outside of Chicago and Cook County.

TABLE NO. 2—INSPECTIONS UNDER GARMENT LAW—IN CITIES OUTSIDE OF COOK COUNTY.

July 1, 1914, to June 30, 1915.

Location.	Number of establishments inspected.	Number of inspections.	Number of employees.					Per cent of children to total employed.
			Total.	Males over 16.	Females over 16.	Boys 14 to 16.	Girls 14 to 16.	
East St. Louis.....	2	4	53	16	32	1	4	9.4
Joliet.....	3	5	65	14	41	2	8	15.4
Quincy.....	11	15	149	37	89	5	18	15.4
Rock Island.....	2	4	47	12	28	1	6	14.8
Springfield.....	5	5	117	26	77	3	11	11.9
Total.....	23	33	431	105	267	12	47	13.7

The sanitary condition of contract shops during the year is shown in the following table:

TABLE NO. 3—SANITARY CONDITION OF CONTRACT SHOPS.

July 1, 1914, to June 30, 1915.

Number of contract shops inspected.	Number of employees.	Sanitary conditions.			
		Clean.	Fair.	Dirty.	Filthy.
342.....	6,461	177	138	26	1

The following table shows the sanitary conditions of home shops:

TABLE NO. 4—SANITARY CONDITION OF HOME SHOPS.

July 1, 1914, to June 30, 1915.

Number of inspections of home finishers' shops.	Sanitary conditions.			
	Clean.	Fair.	Dirty.	Filthy.
392.....	184	160	43	5

The following table shows the higher percentages of female employees in garment shop as compared with the number of men:

TABLE NO. 5—SHOWING GREATER PERCENTAGE OF WOMEN EMPLOYEES IN GARMENT SHOPS—1914-1915.

Number of establishments.	Number of employees.			Per cent of women to total employed.
	Total.	Men.	Women.	
839.....	35,283	15,525	19,756	56

Table No. 6 presents the daily working schedules of women in the various garment shops:

TABLE NO. 6—HOURS OF EMPLOYMENT OF WOMEN IN GARMENT SHOPS—1914-1915.

Less than 8 hours.	8 to 8½ hours.	8½ to 9 hours.	9 to 9½ hours.	10 hours.
3 (.4 percent).....	131 (16 percent)....	198 (24 percent)....	229 (27 percent)....	278 (32 percent).

The following table compares the results of garment inspections for each year, since the law became effective:

TABLE No. 7—RESULTS OF INSPECTIONS OF CLOTHING ESTABLISHMENTS.

Year.	Number of places inspected.	Total employees.	Men.	Women.	Boys 14 to 16.	Girls 14 to 16.	Children under 14.	Children under 16.	Per cent children to total employees.
1833*									
1894.....	1,630	19,644	7,324	11,162	191	976		1,158	5.9
1895.....	1,923	24,786	9,122	13,832	268	1,564		1,832	7.4
1896.....	2,648	24,817	9,798	13,439	246	1,334		1,580	6.4
1897.....	3,688	31,965	13,647	16,580	323	1,415		1,738	5.4
1898.....	2,940	25,711	11,015	13,072				1,624	6.3
1899.....	3,674	35,858	15,376	18,332	298	1,852		2,150	5.9
1900.....	4,519	42,187	17,379	22,827	282	1,679		1,961	4.6

TABLE NO. 7—Concluded.

Year.	Number of places inspected.	Total employees.	Men.	Women.	Boys 14 to 16.	Girls 14 to 16.	Children under 14.	Children under 16.	Per cent children to total employees.
1901.....	5,313	50,417	21,759	25,673	569	2,416	.....	2,985	5.9
1902.....	3,317	43,786	17,058	23,727	700	2,301	.....	3,001	6.9
1903.....	3,133	46,345	19,212	24,639	542	1,962	.....	2,504	5.4
1904.....	3,433	47,765	18,561	27,148	492	1,564	.....	2,056	4.3
1905.....	3,631	56,984	24,383	30,521	569	1,511	.....	2,080	3.7
1906.....	1,559	24,739	11,063	12,513	261	902	.....	1,163	4.7
1907.....	2,141	23,080	8,529	13,281	176	1,094	.....	1,270	5.5
1908.....	2,866	46,907	22,213	22,818	371	1,415	80	1,876	4.0
1909.....	1,569	40,631	18,854	20,291	350	1,136	.....	1,486	3.6
1910.....	1,084	31,423	13,497	16,724	219	982	.....	1,202	3.8
July 1, 1911 to June 30, 1912 [†]	1,486	27,044	12,626	13,522	211	645	.....	856	3.2
July 1, 1912 to June 30, 1913.....	2,559	31,075	14,272	15,862	233	701	7	941	3.0
July 1, 1913 to June 30, 1914.....	3,537	81,855	37,547	41,941	526	1,840	1	2,367	2.9
July 1, 1914 to June 30, 1915.....	2,483	41,729	18,080	22,933	183	533	.....	716	1.7

* Department created. Inspections only part of year.

† Record from January 1, 1911 to June 30 omitted due to change made in fiscal year of this department.

It will be noticed that a smaller number of children between the ages of 14 and 16 years has been reported during the past year, reducing the percentage of children at work in the industries under the "Garment Law" to 1.7 per cent, which is a lower rate than at any time in the history of the enforcement of this law.

During the previous year the chief of this department issued an order to all clothing manufacturers that children under 16 years of age are prohibited from working on sewing machines. This action was taken in view of the fact that most children between the ages of 14 and 16 years could not stand the nervous strain and pace of the swift machines. In most cases these workers were paid by the number of garments or parts of garments produced and on that account their earnings were determined by the time they spent at work and by the number of pieces they finished in a day.

The order to remove all children under 16 years of age from sewing machines is in accord with section 11 of the "Child Labor Law" which prescribes certain dangerous trades at which children under 16 cannot be employed. While the sewing machine itself is not a dangerous machine, still the section recites that children under 16 years of age may not work at any occupation or employment, where it is injurious to their health. That is the construction placed upon this section of the "Child Labor Law" by the Chief Factory Inspector and since that time all children under 16 years of age have been promptly removed from the sewing machine.

Although the manufacturers complained when this order was issued, we have many letters on file, received since then, commending the chief of this department for his prudent action.

In our twentieth annual report we discussed the garment trade in Illinois at great length. The importance of this industry was shown by

the estimated value of production. The process of manufacture was described and the working conditions were presented in detail. The hours of labor and the labor force formed separate chapters.

In the following article we will show some of the dangers connected with the garment trade.

The clothing industry ranks with the headliners in value of product. For the entire United States the product of this industry are valued at over half billion dollars per year, and for the State of Illinois the value of the product exceeds one and a quarter million dollars annually. The state of New York holds first place with reference to the value of output which amounts to over one-half of the entire production.

We find that the larger cities, such as Chicago, Rochester, Baltimore, Philadelphia and New York are the leading centers of the garment industry. Although high rents must be paid in these cities, garment manufacturers are compelled to concentrate in them on account of the dependence of the industry on labor.

The hazards in the various subdivisions of the garment industry are generally speaking very similar, but our statement will cover mostly the making of external garments. The needle, the sewing machine, the pressing iron, and the shears and cutting machines are the principal tools of the garment workers. The workers may be classified into the following groups: Machine operators, hand sewers, pressers, trimmers, and cutters. A great variety of processes are involved in the making of garments most of which are without hazard. We will confine our remarks to those in which accidents have happened.

Upon receiving the cloth from the mill it is subjected to a strict comparison with the sample, and if found satisfactory, it is then examined for defects. The main danger in this connection results from strains due to lifting and carrying the heavy rolls of material.

After the cloth has been examined it is placed in tanks and permitted to shrink. In a piece originally 50 yards long the shrinkage often amounts to as much as from 2 to 4 yards. Having been placed in the vats it remains there for 24 hours, after which it is hung on racks suspended from the ceiling to dry. To reach the racks stepladders must be used. These should be provided with safety feet to prevent slipping.

The finish of the goods is destroyed by the shrinking and drying process, and in order to restore it, after drying, it is placed in a press for 24 hours. Heat is often applied to some kinds of cloth materials, as the pressure will not restore the finish. In such instances iron plates heated in a steam-jacketed oven are placed between the layers of cardboard. About 30 pounds of steam pressure is required to heat the iron plates to the proper temperature. Safety valves should be provided on the jackets of the ovens to prevent excess pressure. The hot plates should be handled with great caution to prevent burns and injuries to the feet by falling.

Some factories follow the practice of removing the cloth from the rolls after examination for defects. The cloth is then folded by machines and the operators of these machines should never attempt to remove a dirt spot from the cloth or even to smooth out creases, while the machine is in motion. In fact, the cloth should never be touched,

especially not near the point of going between the rollers to prevent careless operators from having their fingers caught. The exposed belts, gears, setscrews, pulleys and other dangerous moving parts on the folding machine should be properly guarded.

In the designing room the paper patterns for the garments are cut and prepared. These patterns are then given to the cutters in the cutting department. The cutters trace the outlines of the patterns on the cloth with chalk and then cut the goods with shears or cutting machines always following the chalk lines. Workmen should always point the shears away from themselves. Accidents with shears happen most when doing close work at the edge of the cloth, as the cloth must be held in order to cut it properly.

Electrical cutting machines are employed on the cheaper grades of garments and in cutting linings. Mechanical or electrical cutters are not satisfactory on high grade material. About five thicknesses of suiting can be cut by these machines in one operation. About twenty thicknesses of lining may be cut at one time. The danger of a workman being cut by a mechanical or electrical cutting-machine is caused mostly when cleaning or oiling the cutters. To avoid these accidents the power should be shut off.

The next step in the making of garments is found in the "making" room where specialized processes are carried on, as basting, button-hole sewing, button sewing, attaching collars or sewing in pockets or sleeves.

It frequently happens that the operatives' fingers are pierced by sewing machine needles, due to the extremely high speed at which machines are run, especially on certain classes of work. Electro-plated needles are used, because they do not break so readily and the danger of blood poisoning is less than with the ordinary needle. However the advantage of this needle is still debatable. Pocket serging machines, the Rees and other types of button-hole machines, all run at a high rate of speed are dangerous and operatives should use good judgment in running them.

The driving shafts of machines, especially those located under the benches should be entirely enclosed. This department has always ordered shafting of this kind in these establishments to be enclosed. Many shop foremen contend that smooth shafting is harmless, but in looking over the records of accidents caused by smooth shafting, one must be convinced that the opposite is true. Smooth shafting works havoc in factories, where many women and girls are employed, because they often get in close proximity of the shafting, while arranging their hair, which readily winds around the shafting resulting in severe injuries, such as tearing the scalp off. Women and girls should always wear caps or nets while working around moving machinery. When the shafting is located near the floor, the danger of having the skirts drawn into the belts or shafting is ever present. Belts and shafting should be provided with skirt guards.

The dangerous shafting is being replaced by the individual motor-driven machine. This is a great improvement both as to safety and economy, because, when one machine stops no power is consumed.

The specialization of occupations mentioned in connection with the "making room" is even more pronounced in the pressing department.

One workman may be a very skilled sleeve presser, while another excels in pressing collars. As a rule most pressing is done by hand, except the thick portions of the garments, like the padding. This is pressed by machines which produce a pressure of 1,500 pounds. The table on which the garments are pressed has a temperature of about 200° Fahrenheit, the iron about 350° Fahrenheit. Danger of being struck or burned by irons, especially those on swinging arms, should be guarded against.

Much of the pressing is done with gas irons. Where they are used great care should be given to the condition of the flexible rubber tubing connecting them with the gas supply pipe. It often happens that the rubber tubing melts, while resting against the hot iron. The tailor's goose is considered a source of great danger on account of the inhalation of carbon monoxide. (See p. 50, Bulletin No. 1.)

In the use of electric irons shocks and burns should be guarded against.

The ventilation in garment shops is a subject of vast importance. This department, in the effort to enforce section 11 of the "Health, Safety and Comfort Law", has been investigating the ventilation problem in factories. During the past six months over 175 shops were inspected for this purpose, almost 60 per cent belonging to the garment industry. From this investigation we learn that over 96 per cent of the plants employing over 23,000 men and women did not contain adequate means of ventilation to supply each employee with the legally required amount of fresh air. In garment shops there is a tendency to overcrowd the rooms, especially during the busy seasons. As a rule working rooms in garment shops were found to contain a high degree of temperature. Fresh air should be supplied to the operatives without creating drafts. The faculties of the workers will be more active and each supply of fresh air acts as a stimulant.

On account of the large numbers of employees in most garment factories it is of utmost importance to equip the entire building with a sufficient number of fire escapes, which should be tested constantly and maintained in good condition. Fire escapes must be kept clear and free from all obstructions. The danger of fire in a garment factory is always present on account of the inflammability of the waste and cuttings on the floors and tables. All exit doors must open outward and should be so constructed that they may be opened without effort and without the use of a key. The stairway, hallways and passageways in a clothing factory should be well lighted at all times, should be free from obstructions, and kept in good repair.

The lighting system in garment shops is just as important as the ventilation problem. Even, well distributed lighting serves the eyes of the operatives and results in a higher class of work.

Scraps of cloth and waste should be gathered up each day and stored in metal cans with tight covers. One conscientious employee in an establishment should be selected to inspect all gas irons at the close of each day to ascertain that they have been properly turned off. Likewise every large shop should organize its employees in squads of from 25 to 50 members who shall be drilled at regular periods, so that in case of fire the entire labor force may be conducted out of the building in safety.

RESULTS OF INSPECTIONS ACCORDING TO THE PROVISIONS OF THE "ICE CREAM AND BUTTERINE LAW."

The purpose of this law is to insure sanitary conditions in shops where ice cream and butterine is manufactured.

The places of business where these products are made is subjected to a duplication of inspection by the State Government. The food commissioners inspect these places for the purpose of ascertaining whether the ingredients used in the process of manufacture are free from harmful substances, while on the other hand the Department of Factory Inspection visits these establishments with a view of determining whether the conditions under which the products, ice cream and butterine, are manufactured comply with every sanitary feature incorporated in the law.

The attention of the members of the Forty-ninth General Assembly was called to this duplication of inspection in the twenty-first annual report of the Chief State Factory Inspector, with the request that this law be so amended as to place the entire jurisdiction, both for the inspection of ingredients as well as sanitary surroundings in the hands of the food commissioners. However no legislative action on this proposal was taken; therefore, this duplication of inspection will continue to exist at least another two year period.

PRINCIPAL FEATURES OF THE LAW.

Section 1 of the law demands that the drainage and plumbing of all buildings and rooms occupied by butterine and ice cream manufacturers shall be conducive to healthful and sanitary conditions and that adequate ventilation prevails. Particular mention is made of cellars and basements, in which strict observance of the above mentioned rules is required.

Section 2 of this law requires every room to be at least 8 feet in height and to have an impermeable floor of cement or tiles laid in cement, or an additional flooring of wood saturated with linseed oil. The walls must be plastered and wainscoted. In the discretion of the factory inspector, the walls and ceilings may be required to be whitewashed or calcimined at least once in three months. The utensils must be cleaned and arranged in such order that any part of the room can be readily cleaned; the rooms must be dry and airy; no domestic animal is permitted in a room where the products are made or stored; and no water closets or ash pits shall be within or connected with such rooms.

Section 3 of this law directs that the Chief Factory Inspector issue a certificate to the owner of such manufactories if the conditions are satisfactory.

Section 4 of this law gives the factory inspector power to require alterations, if necessary, when a written notice must be served upon the owner, agent or lessee of such premises either personally or by mail, such orders to be complied with 60 days after service. The penalty clause recites that a violator of these provisions is subject to a fine of not less than fifty dollars nor more than two hundred dollars for the first offense; for the second offense, he is subject to a fine of five hundred dollars or imprisonment for not more than thirty days; for the third offense, a fine of not less than five hundred dollars, or more than sixty

days' imprisonment, or both, is imposed. This law became effective on the first day of July, 1907.

The appended table shows the number of establishments visited in various cities and towns and the number of inspections, the kind of business conducted, the nativity of the owner; location of factory rooms, number of certificates issued, and the kind of order for alterations or improvements issued by deputy inspectors to owners.

A total of 1,351 inspections in 521 establishments was made in 36 cities and towns during the past year. In the preceding year 485 establishments had been inspected. From the table it will be seen that 436 manufactories located in Cook County required 1,261 inspections, whereas 85 establishments in the remaining 35 towns outside of Cook County called for 90 visits by the deputy factory inspectors.

In Cook County as well as in towns outside of Cook County the great majority of establishments manufacturing ice cream were of the small retail confectionery variety. A total of 365 of these stores is registered for the entire State, 307 being located in Cook County and 58 in the smaller cities and towns. Establishments manufacturing and retailing their own product numbered 58 in Cook County and 19 outside of Cook County, making a total of 77 for the entire State. A total of 51 exclusively wholesale manufactories is shown for the State, divided into two groups, 34 in Cook County and 17 outside of Cook County. Sixteen drug stores, 10 restaurants and hotels, 7 bakeries and 7 caterers, mostly all located in Chicago, were found manufacturing ice cream for their own trade.

Of the 521 establishments reported on, 244 were under Greek ownership. The vast majority of Greek ownership is very apparent in Chicago, where the Greeks own more establishments than the other class of citizens combined. In cities and towns outside of Cook County, the majority of establishments are owned by American citizens. Shops conducted by Italians are almost as numerous as those under control of American citizens in Cook County; of the 174 American owned places of business, 107 are located in Cook County, the remaining 67 in the thirty-two towns shown in the table. Greeks operate shops in seventeen towns, whereas only one Italian owned shop is reported outside of Cook County. Three hundred and twenty ice cream manufacturing places are located in basements, 152 on the first floor and the remaining 49 on or above the second floor. Basement shops prevail in Chicago the actual number as reported being 296, leaving only 24 basement shops in cities and towns outside of Cook County. On the other hand, all of the shops, with the exception of the 24 just mentioned in towns outside of Chicago, are situated on the ground floor.

A total of 442 certificates were issued, showing that conditions in these establishments were satisfactory. Sixty applications were refused and 19 were held in abeyance pending full compliance of orders. One thousand one hundred and forty-four orders were issued to remedy defective conditions. Forty orders involved general cleanliness, nineteen orders for repair and installation of adequate drains and plumbing, thirteen orders for provisions of garbage receptacles, twelve orders for the removal of water closets from work room, eleven orders for proper ventilation, eight hundred and eighteen for calcimining walls and ceilings,

one hundred and seventy-nine orders for cementing or repairing floors, ten orders for the removal of domestic animals from factory rooms, ten orders for replacing defective utensils, sixteen orders to properly guard dangerous machinery and fourteen orders to provide screens on doors, windows and ventilators to prevent dirt from being blown into work room.

RESULTS OF INSPECTIONS ACCORDING TO THE ICE CREAM AND BUTTERINE LAW FOR ENTIRE STATE.

July 1, 1914, to June 30, 1915.

City	Number of establishments.	Number of inspections.	Nature of business.							Nativity of owner.			Location of factory room.		
			Wholesale.	Retail.	Retail confectionery.	Bakery.	Drug store.	Caterer.	Hotel and restaurant.	American.	Italian.	Greek.	Basement.	First floor.	Second floor and up.
Chicago and Cook County.....	436	1,261	34	58	307	5	15	7	10	107	102	227	296	91	49
Abingdon.....	1	1			1					1			1		
Altamont.....	1	1			1							1	1		
Arcola.....	1	1			1					1				1	
Belleville.....	1	1	1	1						1				1	
Bloomington.....	8	8			8					8			5	3	
Casey.....	1	1			1					1				1	
Centralia.....	6	8			6					5		1		6	
Charleston.....	4	6	2		4					3			1	4	
Chillicothe.....	2	2			2					2				2	
Danville.....	2	2			2					2			1	1	
Decatur.....	10	10	1		9		1			9			1	4	6
Effingham.....	2	2			2					1		1		2	
Elmwood.....	1	1			1					1			1		
Flora.....	1	1	1	1						1				1	
Galesburg.....	4	4	1		4					3		1	3	1	
Greenville.....	1	1	1	1						1				1	
Henry.....	2	2			1	1				2				2	
Hoopeston.....	3	3		1	2					1	1	1	1	2	
Litchfield.....	2	2			1	1				1			1	1	
Mattoon.....	6	6	1	4	1					5		1		6	
Mt. Carmel.....	2	2			2					1			1	1	
Mt. Vernon.....	1	2			1							1		1	
Newton.....	1	1			1							1		1	
Olney.....	2	2			2					2				2	
Pana.....	3	3			2	1				2			1	3	
Paris.....	3	3			2	1				2			1	2	
Peoria.....	1	1	1	1						1				1	
Robinson.....	2	2			2					2				2	
Rockford.....	2	2			2					2				2	
Salem.....	2	2	1		1					1		1		2	
Shelbyville.....	1	1			1					1			1		
Springfield.....	1	1			1					1			1	1	
Sterling.....	2	2	1		1					1		1	1	1	
Taylorville.....	2	2		1	1					1			1	1	
Zion City.....	1	1	1	1						1				1	
Total outside Cook County.....	\$5	90	17	19	58	2	1			67	1	17	24	61	
Total for entire State.....	521	1,351	51	77	365	7	16	7	10	174	103	244	320	152	49

RESULTS OF INSPECTIONS ACCORDING TO THE ICE CREAM AND BUTTERINE LAW FOR ENTIRE STATE—Concluded.

City.	Number of certificates.		Orders issued pertaining to												
			Cleanliness.	Plumbing.	Garbage and receptacles.	Water closets.	Ventilation.	Calei-mining.		Counting or repairing foot.	Animals.	Factory rooms for sleeping quarters.	Defective utensils.	Machinery.	Screens on doors, windows and ventilators.
	Issued.	Refused.						Walls.	Ceiling.						
Chicago and Cook County	386	50	32	18	12	9	6	384	384	171	8	2	10	16	4
Abingdon	1														
Altamont		1						1	1						
Arcola		1	1					1	1						
Belleville	1														
Bloomington	8														
Casey	1														
Centralia	5	1						2	2	1					1
Charleston		4					1	4	4	1					2
Chillicothe	2														
Danville	2														
Decatur	10														
Effingham	1	1						1	1						1
Elmwood	1														
Flora	1														
Galesburg	4														
Greenville	1														
Henry	2														
Hoopeson	1	2	1			1		2	2	1	1				1
Litchfield			2		1		1	2	2						1
Mattoon	2		1	1		2		1	2	1					2
Mt. Carmel	1						1	1	1						
Mt. Vernon	1		1				1	1	1						
Newton															
Olney	2														
Pana								3	3	1					
Paris	1		1					2	2	1					
Peoria	1														
Robinson															
Rockford	2														
Salem			1					2	2	1	1				1
Shelbyville								1	1	1					1
Springfield	1														
Sterling	2														
Taylorville	2														
Zion City															
Total outside Cook County	56	10	8	1	1	3	5	25	25	8	2	.....	.....	.....	10
Total for entire State	442	60	40	19	13	12	11	409	409	179	10	2	10	16	14

RESULTS OF PROSECUTION—LEGAL DEPARTMENT.

The following tables show the work of prosecution of violators of the law. Table No. 1 compares the results of the year just ended with those of the preceding year. During the past twelve months 485 convictions were secured, with fines and costs amounting to \$7,114.40. The number of convictions obtained in the municipal courts of Chicago is 280, the fines and costs amounting to \$4,192.75; while cases brought in courts outside of Chicago numbered 205, with fines and costs aggregating \$2,921.65.

Table No. 2 presents the cases by months brought before the Municipal Court of Chicago. A total of 438 cases was presented, 280 of which resulted in convictions, while 158 were discharged.

Table No. 3 offers a list of 48 towns in which our deputy inspectors prosecuted violators of the laws.

Table No. 4 shows the totals of the results of prosecutions for the city of Chicago and the remaining 48 towns mentioned in Table No. 3.

TABLE NO. 1—COMPARATIVE TABLE OF RESULTS OF PROSECUTIONS.

July 1, 1914, to June 30, 1915, and July 1, 1913, to June 30, 1914.

Kind of law.	Year.	Number of cases.	Fines and costs.
<i>City of Chicago—</i>			
Child Labor Law.....	1914-1915	82	\$1,122 20
	1913-1914	226	3,113 50
Ten Hour Law.....	1914-1915	166	2,315 25
	1913-1914	237	3,555 50
Health, Safety and Comfort Law.....	1914-1915	11	177 00
	1913-1914	21	328 00
Occupational Disease Law.....	1914-1915	3	47 50
	1913-1914	1	8 50
Structural Law.....	1914-1915	9	280 75
	1913-1914	10	315 50
Wash House Law.....	1914-1915	9	250 00
	1913-1914	*	*
Blower Law.....	1914-1915	.....	.....
	1913-1914	4	32 00
Ice Cream Law.....	1914-1915	.....	.....
	1913-1914	1	3 00
Total for Chicago.....	1914-1915	280	\$4,192 75
	1913-1914	500	7,356 00
<i>Outside of Chicago—</i>			
Child Labor Law.....	1914-1915	74	\$ 810 25
	1913-1914	112	1,270 75
Ten Hour Law.....	1914-1915	115	1,681 35
	1913-1914	109	1,983 90
Health, Safety and Comfort Law.....	1914-1915	6	117 40
	1913-1914	5	69 00
Structural Law.....	1914-1915	2	162 25
	1913-1914	.....	.....
Wash House Law.....	1914-1915	8	200 40
	1913-1914	*	*
Total outside of Chicago.....	1914-1915	205	\$2,921 65
	1913-1914	226	3,323 65
Total for the entire State.....	1914-1915	485	\$ 7,114 40
	1913-1914	726	10,679 65

* Law went into effect July 1, 1914.

TABLE NO. 2—RESULTS OF PROSECUTIONS IN THE CITY OF CHICAGO.
July 1, 1914, to June 30, 1915.

Kind of violation.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Total.	Fines.	Costs.	Total fines and costs.
<i>Child Labor Law—</i>																
Under 14 years of age.....	4	1	2	1	1	4	4	2	7	3	3	1	25	\$ 45 00	\$ 9 00	\$ 54 00
No age and school certificate.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Violation of section 11.....	2	.....	.....	.....	2	1	5	1	2	.....	2	.....	3	55 00	30 00	85 00
Before 7 a. m.—after 7 p. m.....	8	3	2	.....	.....	2	1	.....	.....	.....	.....	.....	17	120 00	56 00	176 00
Over 8 hours per day.....	1	.....	.....	.....	.....	1	.....	.....	2	.....	5	.....	23	135 00	151 00	286 00
Obstructions.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	85 00	33 25	118 25
<i>Women's 10 Hour Law—</i>																
Over 10 hours per day.....	5	1	3	3	5	3	4	4	8	1	4	2	43	832 00	254 00	1,086 00
No time record section 5.....	12	6	16	10	11	12	9	8	8	11	14	6	123	539 00	690 25	1,229 25
Health, Safety and Comfort Law.....	3	1	.....	1	1	1	.....	.....	.....	.....	.....	3	11	95 00	82 00	177 00
Structural Law.....	.....	.....	.....	.....	.....	.....	5	.....	.....	1	1	.....	9	210 00	70 75	280 75
Occupational Disease Law.....	1	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	30 00	17 50	47 50
Wash House Law.....	3	1	.....	.....	.....	.....	.....	2	.....	3	.....	.....	9	190 00	60 00	250 00
Number of cases.....	39	13	27	17	20	28	29	17	28	21	29	12	280	.....	.....	\$4,192 75
Fines.....	\$410 50	\$95 00	\$246 00	\$202 00	\$127 00	\$206 00	\$180 00	\$247 00	\$296 00	\$137 00	\$339 00	\$106 00	\$2,591 50	.....	.....	.....
Costs.....	249 00	91 00	155 00	90 00	112 25	135 00	114 00	85 50	174 00	119 25	184 25	92 00	1,601 25	.....	.....	.....
Number of cases discharged.....	11	5	7	13	13	14	21	15	18	11	16	14	158	.....	.....	.....

TABLE NO. 3—Concluded.

City.	Ten Hour Law.						Health, Safety and Comfort.				Structural Law.				Wash House Law.				Fines.	Costs.	Total.
	Over 10 hours.			No time record.			Number of cases.	Fines.	Costs.	Number of cases.	Fines.	Costs.	Number of cases.	Fines.	Costs.						
	Number of cases.	Fines.	Costs.	Number of cases.	Fines.	Costs.															
Elgin.....				18	\$51 00	\$68 00													\$ 5 00	\$ 8 60	\$ 13 60
Evanston.....				3	15 00	21 85													71 00	80 00	151 00
Galesburg.....				2	10 00	10 00													15 00	21 85	36 85
Glencoe.....																			10 00	10 00	20 00
Harrin.....																			15 00	7 35	22 35
LaSalle.....																			5 00	4 60	9 60
Lyons.....	1	\$ 4 50																	4 50	4 50	9 00
Marion.....				3	15 00	5 40													15 00	5 40	20 40
Marshall.....																			5 00	1 00	6 00
Mattoon.....								1	\$ 5 00	\$2 85									45 00	14 25	39 25
Mendota.....																			25 00	22 65	67 65
Morris.....				1	5 00	2 00													5 00	2 00	7 00
Murphysboro.....	1	\$ 25 00	7 15	2	6 00	14 30					1	\$35 00	\$6 40						21 45	52 45	73 90
Niles.....																			35 00	6 40	41 40
Nokomis.....				6	30 00	9 30													30 00	9 30	39 30
Oak Park.....																			30 00	9 30	39 30
Pekin.....																			20 00	18 50	38 50
Pontiac.....	7	135 00	43 70	9	50 00	72 35													10 00	20 00	30 00
Quincy.....	1	25 00	2 10																305 00	237 30	542 30
Rockford.....	2	50 00	16 80	1	5 00	8 10													25 00	2 10	27 10
St. Charles.....								1	20 00										5 00	2 80	7 80
Sandwich.....	1	23 00	2 00							9 00									150 00	49 45	199 45
Springfield.....																			15 00	9 20	24 20
Streator.....	2	50 00	2 00																20 00	9 00	29 00
Sycamore.....																			20 00	4 00	24 00
Virden.....	1	23 00	6 20	2	5 00	2 00													25 00	2 00	27 00
Washington.....	3	75 00	6 00	3	15 00	3 75													7 65	9 10	16 75
Wassaka.....	1	23 00	10 00																65 00	5 80	70 80
Winnebago.....																			5 00	2 00	7 00
Total.....	34	\$710 00	\$168 95	81	\$381 00	\$371 40	6	\$75 00	\$42 40	2	\$135 00	\$27 25	8	\$126 00	\$74 40		\$1,012 05	\$1,909 65	\$2,921 65		

TABLE NO. 4—RESULTS OF PROSECUTIONS FOR THE ENTIRE STATE.

July 1, 1914, to June 30, 1915.

Child Labor Law.																					
Location.	Under 14 years of age.			Over 8 hours per day.			Before 7 a. m. or after 7 p. m.			Without age or school certificates.			Violation section 11.			Obstruction.			Total		
	Num-ber of cases.	Fines.	Costs.	Num-ber of cases.	Fines.	Costs.	Num-ber of cases.	Fines.	Costs.	Num-ber of cases.	Fines.	Costs.	Num-ber of cases.	Fines.	Costs.	Num-ber of cases.	Fines.	Costs.	Num-ber of cases.	Fines.	Costs.
In Chicago.	9	\$45 00	\$ 9 00	23	\$135 00	\$151 00	17	\$120 00	\$56 00	25	\$255 50	\$147 50	3	\$55 00	\$30 00	5	\$85 00	\$33 25	82	\$695 50	\$426 75
Outside of Chi- cago.....	5	30 00	40 00	17	137 65	43 65	16	95 00	43 15	32	185 00	179 65	3	30 00	17 15	1	5 00	4 00	74	482 65	327 60
Total entire State.....	14	\$75 00	\$49 00	40	\$272 65	\$194 65	33	\$215 00	\$99 15	57	\$440 50	\$327 15	6	\$85 00	\$47 15	6	\$90 00	\$37 25	156	\$1,178 15	\$754 35

TABLE NO. 4—Concluded.

Location.	Ten Hour Law.						Health, Safety and Comfort.			Occupational Disease Law.			Structural Law.			Wash House Law.			Total of all laws.			Total fines and costs.			
	Over 10 hours.			No time record.			Total.																		
	Number of cases.	Fines.	Costs.	Number of cases.	Fines.	Costs.	Number of cases.	Fines.	Costs.	Number of cases.	Fines.	Costs.	Number of cases.	Fines.	Costs.	Number of cases.	Fines.	Costs.	Number of cases.	Fines.	Costs.				
In Chicago.....	43	\$832	\$254 00	123	\$539	\$690 25	166	\$1,371	\$944 25	11	\$95	\$82 00	3	\$30	\$17 50	9	\$210	\$70 75	290	\$2,591 50	\$1,601 25	\$4,192 75			
Outside of Chi- cago.....	34	710	168 95	81	381	371 40	115	1,091	540 35	6	75	42 40	.....	.....	.....	2	135	27 25	8	126	74 40	205	1,909 65	1,012 00	2,921 65
Total entire State.....	77	\$1,542	\$422 95	204	\$920	\$1,061 65	281	\$2,462	\$1,484 60	17	\$170	\$124 40	3	\$30	\$17 50	11	\$345	\$98 00	17	\$316	\$134 40	485	\$4,501 15	\$2,613 25	\$7,114 40

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